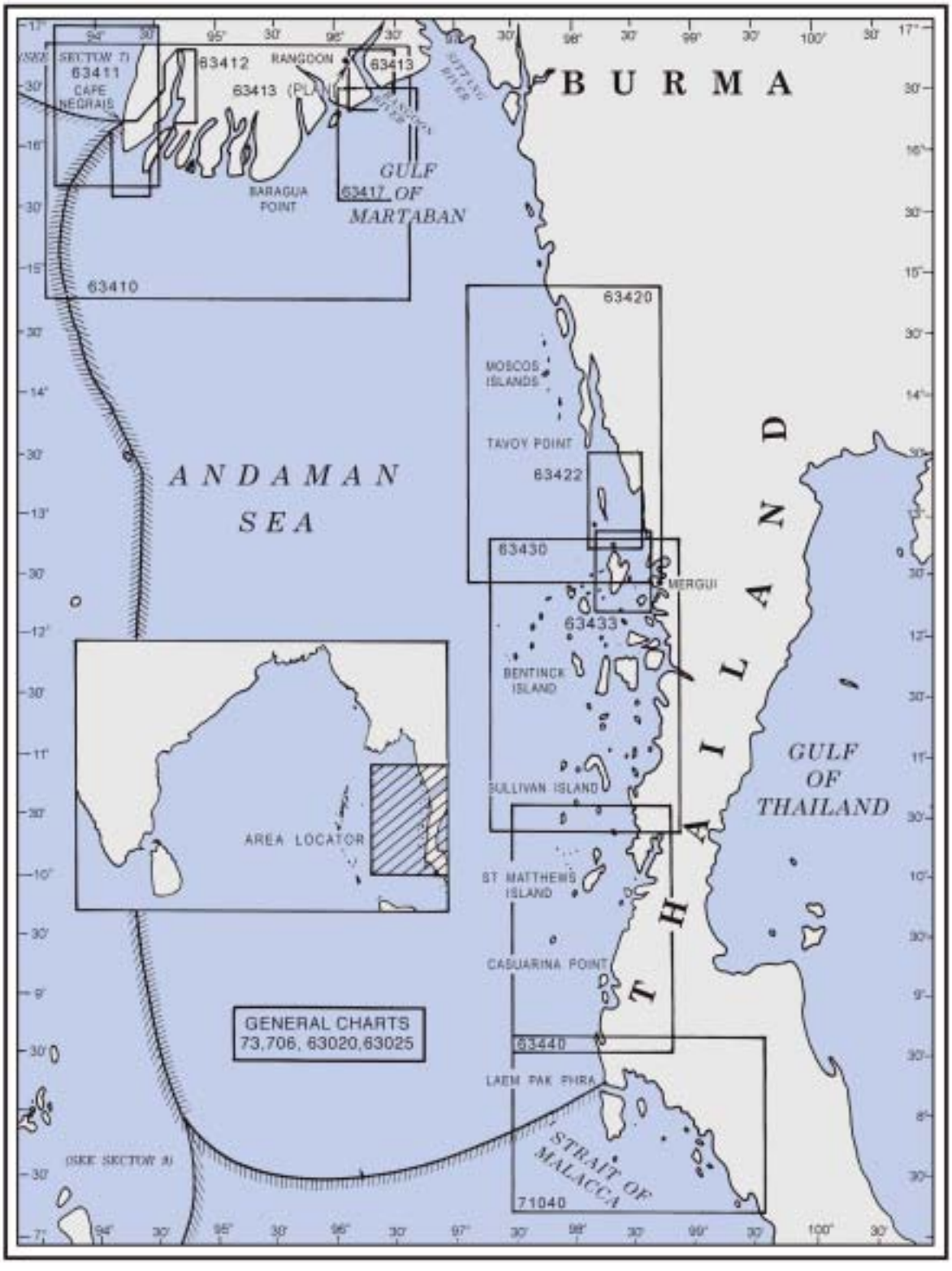
Click on "See Sector" to be hotlinked to that Sector.



Additional chart coverage may be found in CATP2, Catalog of Nautical Charts.

SECTOR **8** — CHART INFORMATION

Table of Contents

Table of Contents

SECTOR 8

SOUTH COAST OF BURMA (EAST OF CAPE NEGRAIS) AND THE WEST COAST OF THAILAND

Plan.—This sector describes the coasts of Burma (Myanmar) and Thailand between Cape Negrais and Ko Phucket and includes the Irrawaddy River Delta, the Gulf of Martaban, and the Mergui Archipelago. The descriptive sequence is E and then S.

General Remarks

8.1 Between Cape Negrais and the Sittang River, the Irrawaddy coast, the Bassein River and the Rangoon River, which include the ports of Bassein and Rangoon are described first. A description of the Tenasserim Coast then follows as far S as the Tavoy River and includes the port of Moulmein, Bentinck Sound, the Ye River, Heinze Chaung, and the offlying Moscos Islands. Bentinck Sound provides some shelter.

The coast of Burma, between Tavoy Point and Victoria Point, is indented by many inlets of little or no commercial value to ocean shipping. Many mountain ranges parallel this coast. The only ports of any importance along this entire section of coast are Tavoy and Mergui.

The Pakchan River forms the boundary between Burma and Thailand. **Victoria Point** (9˚58'N., 98˚33'E.) lies on the N side of the entrance of this river.

The coast of Thailand, between the entrance of the Pakchan River and the entrance of Takua Pa Inlet, is mostly low, densely wooded, and intersected by many rivers and creeks. It has not been closely examined. A range of mountains backs this coast. A number of islands, many surrounded by reefs, lie off this coast; others are joined to the mainland by sandbanks. Takua Pa Inlet is formed by a large river which flows into the sea by way of four channels between the parallels of 9˚15'N and 8˚52'N.

The coast between the S entrance of the Takua Pa Inlet and the N entrance of Chong Pak Phra is regular and is fronted by the Similan Islands. Chong Pak Phra is the narrow strait between the coast and Ko Phuket, a large island to the S. The W coast of the latter island is indented by several open bays. The N part of this coast, with the exception of a small area, is low, wooded, and backed by hills of moderate elevation. The S part rises steeply to a mountain range from about 262 to 518m high, densely wooded, and sloping gradually to the N and S.

The Mergui Archipelago, which consists of approximately 1,000 islands ranging in size from mere hummocks of rock to King Island, the largest of the group, with an area of about 175 square miles, lies within the 95m curve. The archipelago extends from Tavoy Island, the N extremity of which is nearly 20 miles S of Tavoy Point, to the Similan Islands, a distance of about 285 miles.The Great Western Torres Islands, the outermost islands, lie about 70 miles off the mainland. Some of the islands have mountain peaks which attain a height of 762m. The outer islands are steep and wooded; the nearshore islands are low and covered with jungle. There are no ports of significance, but there are many sheltered anchorages.

Winds—Weather.—The weather and climate of Burma have been previously described in paragraph 7.24.

The climatic seasons of the Tenasserim Coast and the W coast of Thailand are based on two major wind systems, namely the Northeast Monsoon and the Southwest Monsoon, each with its own weather characteristics.

The Northeast Monsoon, which is associated with the Northern Hemisphere winter, extends from early December through late March. This is the dry season, but a flow of warm moist air from across the South China Sea covers the beforementioned coasts and causes somewhat higher cloudiness, occasional thunderstorms, higher temperatures, and humidities than over the remaining areas. The greatest contrasts are in November, December, and January, when these coasts are hot, humid, and rainy. Thunderstorms reach their lowest frequency during the Northeast Monsoon. Temperatures reach their lowest values, except at some stations along these coasts where all seasons are about equally warm and humid. Cloudiness is at a minimum, with the lowest averages usually occurring in January. Visibilities are usually good, but there is some early morning fog.

The spring intermonsoon season, usually from mid-March to mid-May, is the period in which the dry NE winds give way to the moist SW winds. Weak and variable winds occur in April and May. There is a slight increase in rainfall in April and a big increase in May. Thunderstorm frequencies rise sharply, and are most frequent during May. Temperatures reach their maximum values in April. Relative humidities and cloudiness increase.

The Southwest Monsoon, which extends from mid-May through late September, is the rainy season. Daily intermittent light rain, interspersed with occasional heavy rainstorms or thunderstorms accompanied by torrential downpours, occur. Cloudiness reaches a maximum during the Southwest Monsoon. Maximum cloud cover reaches 80 to 95 per cent. Temperatures decrease slightly at most places due to the increased cloud cover. The average daily temperatures are in the upper 27˚ or low 32˚C; relative humidity reaches its highest values. Visibility is usually good. Poor visibility occurs mainly during heavy rain squalls.

The autumn intermonsoon season is normally limited to the months of October and November. During this period, the moist Southwester Monsoon is replaced by moist E winds over these coasts. Weak and variable winds, with land and sea breezes prevailing, occur until the Northeast Monsoon is established. Rainfall decreases, but thunderstorms increase slightly over these coasts. Temperatures and relative humidity remain high. Cloudiness decreases, except over the S of the Tenasserim coast and the W coast of Thailand. Periods of low visibilities are rare.

Tides—Currents.—The current W of the entrance of the Irrawaddy River is irregular in the fine weather season and

Return to paragraph: 8.32 8.38

varies with the direction of wind, here the current has no apparent connection with the rise and fall of the tide.

During November, December, and January, little or no flood current is observed S of Alguada Reefs, except at springs.

The tides along the Tenasserim coast and along the W coast of Thailand are semidiurnal with a small diurnal inequality in both time and height. The tides approach these coasts from the SSW and progress N. The mean spring ranges increase from about 3m at the Burma-Thailand border to over 5.2m at Mergui.

The currents flow at an average rate of 0.4 knot, with a maximum of about 0.7 knot. The set and drift of the currents in local areas often varies from the patterns shown below. This is due to frequent storms. Near the coast, the tidal currents will also exert great influence and will either augment or deter the non-tidal currents.

The currents along the Tenasserim coast and along the W coast of Thailand usually set N in January and S in February. In March the water flowing N from the Strait of Malacca causes a N current to flow along these coasts. This flow continues through April. In May the currents set from S to SW, except for the extreme S part of this area where a N current still exists. The currents set S in June and July and N from August through December.

The tidal current movement is usually semidiurnal in character with some variations in the velocities and durations of the flows. The tidal currents, as a rule, set from ENE to NNW on the rising tide and from WSW to SSE on the falling tide. Considerable variation in set and drift is to be expected between the many islands off these coasts and in the confined areas and estuaries.

Tidal currents are strong along the entire coast between Tavoy Point and the Burma-Thailand border. Between Tavoy Point and Forrest Strait, the tidal currents usually set N on the rising tide and S on the falling tide at rates of 2 to 4 knots. The tidal currents attain a rate of 2.3 knots through Forrest Strait. In deeper water offshore, the tidal effect becomes negligible and the general circulation predominates. Tidal bores occur in the mouths of rivers and bays.

There is comparatively little reliable information concerning the tidal currents off the W coast of Thailand. These tidal currents seldom exceed 2 to 3 knots and are seldom experienced over 8 miles offshore.

Cape Negrais to the Sittang River

8.2 **Cape Negrais** (16˚02'N., 94˚12'E.), the seaward extremity of a spur of the Arakan Yoma range, is fronted by conspicuous cliffs which rise about 0.8 mile inland to a high summit. The cape has been reported to be a good radar target up to 24 miles.

The coast of the Irrawaddy Delta is low along its entire length between the Bassein River and the Sittang River. The only high coastal ground lies on the W side of the mouth of the Bassein River; here the S extremity of the Arakan Yoma Range terminates in the vicinity of Maw Dengi. Between the Bassein River and the China Bakir River there are no landmarks and the navigational aids are few in number.

Depths—Limitations.—Between positions S of Purian Point and Baragua Point, the 20m curve lies about 10 to 20 miles offshore. The 10m curve roughly parallels the 20m curves at distances of about 2 to 8 miles within the latter curve. Shoal depths of 5.5m and less lie between the 11m curve and the shore.

The 20m curves lies about 18 miles SE and 21 miles E of Baragua Point and then extends E to the vicinity of Kalegauk Island, and approximates the outer limits of the Gulf of Martaban.

The 10m curve to the SE and E of Baragua Point lies only about 1 to 2 miles within the 20m curve, but to the ENE it lies between 8 and 30 miles offshore.

Those depths and dangers which lie within the 10m curve are described together with the principal description of that part of the coast which they front.

A shoal, with a depth of 9.1m, was reported to lie about 46 miles S of Elephant Point.

Caution.—Vessels should not approach within a distance of 3 miles of the coast in the vicinity of Cape Negrais. A fringing reef and off-lying rocks make caution advisable even outside this distance.

The shallow bank, which fronts the delta shore between Purian Point and Baragua Point, should not be shoaled to depths of less than 18.3m.

In 1984, offshore drilling and survey ships were operating in the area S of Irawaddy up to 45 miles offshore. These vessels and platforms should be given a wide berth.

The coast between Cape Negrais and Maw Dengi, about 6 miles SSE, consists of a series of low, densely-wooded hills. In the vicinity of Maw Dengi these hills have some conspicuous, reddish slopes of driven sand which leave well-defined edges of dark foliage near their summits.

The coast between Cape Negrais and Maw Dengi is fringed by reefs and shoal patches which extend up to 1.3 miles offshore in places.

Maw Dengi (Pagoda Point) (15˚57'N., 94˚15'E.), about 30m high and flat, terminates in a bare bluff. A pagoda lies on the point and is visible above the trees. A small 2.7m high obelisk lies on the reef on the SE extremity of Maw Dengi.

A shoal, with depths of 5.5m and less, lies up to 0.5 mile S and W respectively of the point. A detached 5.5m patch lies about 1 mile W of the point.

The Irrawaddy River Delta

8.3 The Irrawaddy River rises in the N part of Burma and generally flows to the S. Augmented by numerous tributaries, the Irrawaddy River flows into the Bay of Bengal by way of several channels through an extensive delta lying approximately between the meridians of 94˚15'E and 96˚50'E. This delta is being constantly extended seaward by the deposit of silt. Many low islands are formed near its seaward extremity by tidal backwaters and smaller cross channels which connect with the main channels.

The only channels through the Irrawaddy Delta used by ocean-going vessels are the Bassein River and the Rangoon River, the furthest W and E, respectively.

Approaches to the Bassein River

8.4 Maw Dengi, which lies on the NW side of the entrance of the Bassein River, has been previously described in paragraph 8.2.

Purian Point (15˚50'N., 94˚24'E.), low and backed by a group of trees 22.9m high, lies on the SE side of the entrance of the Bassein River. White sandstone low bluffs extend 1.5 miles NE from the point. Higher bluffs begin about 1 mile NNE of the point and extend to the N for about 1.3 miles.

Tides—Currents.—Tides in the entrance of the Bassein River are semidiurnal.

The tidal currents set strongly across Phaeton Shoals; the flood current sets E and the ebb current sets W.

About 1 mile N of Thamihla Kyun the tidal currents are rotary during spring tides. At the beginning of the flood tide, the current sets 152˚ and changes through 090˚, so that at the end of the flood it sets about 057˚. With the commencement of the ebb tide, the current sets about 315˚ and changes through 270˚, setting at the end about 225˚. The greatest velocity, 1.5 knots, is attained during the second and third quarters of each tide.

Near the entrance bar, the flood current sets about E and the ebb current sets between SW and SSW at velocities of 1.5 to 3.5 knots during spring tides. At spring tides, during the rainy season, the ebb current may reach a velocity of 6 knots.

Depths—Limitations.—.Alguada Reef (15˚42'N., 94˚12'E.), almost awash at HWS, has detached sunken rocks extending a considerable distance from it. Hugh Rose Rock, which is awash, lies off the N end of the reef about 2.5 miles NNE of the light, which lies near the SW end of the reef. A 4.1m patch lies about 1.3 miles S of the light. Depths of 10.1m and less extend about 0.8 miles farther SW.

Alguada Reef Light bearing 092˚

Caution.—Less water than charted has been reported to lie in an area between 19 miles W and 18.5 miles SSW of Alguada Reef Light.

Several detached shoal patches, with depths of 5.5 to 14.6m, have been reported to lie within a 1 mile radius of a position about 17 miles WNW of Alguada Reef Light.

8.5 **Phaeton Shoals** (15˚47'N., 94˚14'E.), a group of shoal patches with a least depth of 4.3m and 2 miles in extent, lie centered about 10.3 miles S of Maw Dengi. Depths of 11 to 18.3m surround these shoals.

Thamihla Kyun (15˚52'N., 94˚17'E.), flat and wooded, lies about 5.5 miles SSE of Maw Dengi. Reefs and shoals extend about 2 miles SSW and 0.8 mile NE from the island. Rocky patches, with a least depth of 7.9m, extend about 0.8 mile W from the island. Thamihla Kyun has been reported to be a good radar target up to 18 miles.

Baroni Rock (15˚52'N., 94˚17'E.), with a least depth of 4.9m, lies about 0.5 mile NE of the N end of Thamihla Kyun.

Haing Gyi Shoal (15˚57'N., 94˚17'E.), with depths of 5.5m and less, extends about 5.5 miles S into the river entrance from the shore about 3.3 miles NE of Maw Dengi.

Depths in the channel between Thamihla Kyun and the shore bank extending about 6 miles WNW from Purian Point range from 6.1 to 9.1m. Depths in the approach to and within the entrance channel W and N of Thamihla Kyun range from 18.3 to 7.3m.

Pilotage.—Pilotage is compulsory. Pilots will board off the pilot station, located about 0.3 mile SE of Dalhousie Point.

During the Northeast Monsoon, if no pilot is readily available, a vessel should proceed to the anchorage SE of Thamihla Kyun.

To avoid delay, the vessel's ETA should be sent to the Port Officer at Bassein at least 48 hours prior to arrival.

Directions.—Vessels approaching the entrance of the Bassein River from the S should not approach Alguada Light closer than 3 miles. The summit of Haing Gyi Kyun bearing 020˚, and well open E of Thamihla Kyun, leads about 0.5 mile E of the easternmost shoal depths of Alguada Reefs and Phaeton Shoals. Having passed Phaeton Shoals, course should be shaped for the anchorage SE of Thamihla Kyun. Care should be taken to allow for the tidal current.

A course of 350˚ should be steered to pass E of the two lighted buoys E of Thamihla Kyun, passing N of Broni Rock and then altering course to the NE, entering the river between Haing Gyi Shoal and Purian Bank. When 3 miles S of Rocky Point, alter course NNE and pass not less than 0.2 mile W of Burgess Rock. Having cleared that rock course should be altered to the NE and then proceed to the anchorage off the pilot station at Dalhousie Point.

Vessels approaching the entrance of the river from the W, if proceeding to the anchorage SE of Thamihla Kyun, should pass about 1 mile N of the island so as to clear the shoal depths N of Baroni Rock. When Thamihla Kyun Light bears 206˚, steer for the anchorage. This approach is not recommended during the Southwest Monsoon, when the vessel should proceed directly to the anchorage off the pilot station.

Anchorage.—During the Northeast Monsoon, good anchorage can be taken, in depths of 8.2 to 9.1m, about 1 mile SE of Thamihla Kyun. When anchored in this position, the summit on Haing Gyi Kyun should bear about 016˚ and the light structure on Thamihla Kyun about 322˚.

The Bassein River to Bassein

8.6 The Bassein River, the W of the channels leading through the Irrawaddy Delta, is the means of access for oceagoing vessels calling at the port of Bassein, about 75 miles above the river's entrance.

The river entrance has been reported to be a good radar target up to 15 miles.

Winds—Weather.—The weather generally is hot and humid. The heavy rainfall, which sometimes exceeds 2,700mm

annually, occurs during the Southwest Monsoon between June and September.

Storm and weather signals are displayed at Thamihla Kyun in accordance with the Indian Extended System. The Extended System is in use at Bassein; the port receives information but no signals are displayed.

Tides—Currents.—Large diurnal inequalities and seasonal variations best describe the tides at Bassein.

Tidal currents at springs attain velocities of 1.5 to 2 knots during the flood and up to 3 knots during the ebb. During freshets the velocity may reach 5 knots.

A tide gauge lies on Ashby Rockys near the W bank of the river and just N of Panmawaddy Flat. A white cage topmark and red, black, and white plaques from the top downward, respectively, mark the tide gauge. Each plaque represents 0.3m; the lower edge of the topmost white plaque marks the 7.9m level.

Depths—Limitations.—The least depth in the channel over the bar which lies across the entrance of the Bassein River is about 6.1m. The bar lies between the shallow flat close E of the Maw Dengi and the W and SW edges of Purian Bank. The channel over the bar leads between Purian Bank to the E and Haing Gyi Shoal to the W.

The controlling depth in the river channel between Thamihla Kyun and Bassein is the depth over Panmawaddy Flat. In 1964, the channel was dredged to 5.2m.

Changes in the channel are frequent and the navigational aids are scarce. This lack of navigational aids makes navigation at night impracticable.

Due to the narrowness of the river at Bassein, single-screw vessels exceeding a length of 137m and twin-screw vessels exceeding a length of 145m are advised not to attempt the upriver passage.

Deep-draft vessels await HW in order to cross the entrance bar; HW is essential to cross Panmawaddy Flat. Successive periods of HW are usually required and the passage in both directions ordinarily takes more than a day.

In heavy weather, the best time to cross the bar is between half tide and 2 hours after HW at Thamihla Kyun. During the Southwest Monsoon, a clearance of at least 1.2m under the keel is considered necessary when crossing the entrance bar.

Haing Gyi Kyun (16˚00'N., 94˚19'E.), an island with a 135m hugh densely-wooded summit on its NE extremity, lies with Rocky Point, its S extremity, about 5 miles ENE of Maw Dengi. A 22m high tree on Southeast Point, about 0.3 mile NNE of Rocky Point, is a good mark.

Wolf Rock (15˚59'N., 94˚20'E.), with a depth of less than 1.8m, lies about 0.4 mile off the E side of Haing Gyi Kyun. Foul ground extends about 0.4 mile E and S from the rock.

The E bank of the river between Purian Point and Ward Point, about 10.8 miles to the N, forms the SE side of the river entrance.

8.7 Purian Bank (15˚53'N., 94˚22'E.) lies within the limits of the shore bank which extends about 6 miles NW and then 9.8 miles NE to Ward Point. Depths over this bank and shoal are less than 5.5m.

Burgess Rock (16˚00'N., 94˚22'E.), with a least depth of 5.5m, lies about in the middle of the main fairway, about 2.8 miles WSW of Ward Point.

Dalhousie Point, on the W bank about 2.5 miles N of Ward Point, is marked by several pagodas.

Long Sand (16˚04'N., 94˚28'E.), which consists of two islands lying on a long, narrow shoal, lies about 3 miles ENE of Ward Point. Shoal depths extend about 3 miles WSW and NNE from Long Sand.

Tazingyun (16˚09'N., 94˚32'E.), which consists of two islands close together, lies on the E side of the fairway about 4 miles above Long Sand.

Ransom Reach (16˚17'N., 94˚39'E.) is entered about 7.5 miles upriver from Tazingyun. Sesostris Rocks lie on the W side of the reach; two small islands lie on the E side of the reach.

Sinswe Kyun (16˚23'N., 94˚42'E.) lies in mid-channel at the N end of Ransom Reach. Alexander Rock, with a least depth of 4.6m, lies in mid-channel about 0.5 mile S of Sinswe Kyun. Pariah Rock, with a depth of less than 1.8m, lies about 1.8 miles N of Sinswe Kyun at the outer edge of Enterprise Flat.

Amazon Point (16˚29'N., 94˚41'E.), on the E bank of the river about 5.3 miles N of Sinswe Kyun, marks the S entrance point of the shallow Panmawaddy River. Panmawaddy Flat, with a least depth of 0.3m and surrounded by shoal depths of 5.5m and less, lies with its N end about 1.3 miles SW of Amazon Point.

Cockatoo Point (16˚30'N., 94˚40'E.), on the W bank of the river, lies 1.8 miles NW of Amazon Point. Ashby Rocks, marked by a beacon, lie close N of Cockatoo Point.

Elbow Point (16˚32'N., 94˚41'E.) lies about 2.8 miles NNW of Amazon Point. Elbow Shoal, as defined by the 6m curve, lies about 1 mile SSW of Elbow Point at the outer end of a spit extending from the shore.

Rangoon Creek, on the SE side of Junction Reach, flows into the Bassein River about 8.5 miles above the entrance of the Panmawaddy River. Two conspicuous masts support telegraph wires across its entrance.

Anchorage.—Anchorage can be taken, in depths of 9.1 to 10.1m, about 1 mile E of Dalhousie Point.

Vessels suspected of or infected with yellow fever must anchor off Dalhousie Point, not less than 0.5 mile distant from the LW line. Vessels with plague or cholera on board may anchor off Takaing Pagoda on the W bank of the river about 2 miles below Bassein. Vessels with other diseases on board may anchor anywhere below the wharves.

8.8 Bassein (16˚47'N., 94˚44'E.) (World Port Index No. 49640), Burma's second-largest seaport, lies on the E bank of the Bassein River, about 75 miles above the mouth. Vessels usually frequent the port between January and September. Bassein is primarily a rice-exporting center. The port is open to vessels up to 145m in length and 7m draft during the fine season and up to 7.3m draft during the Southwest Monsoon.

Each rice mill has one or more jetties, with alongside depths of 5.2 to 7.6m. About 732m of berthing space is provided for lighters and native craft.

Three fixed moorings, capable of accommodating vessels up to 107m in length, lie off the jetties, in depths of 5.5 to 6.7m. Larger vessels sometimes anchor or moor off the jetties.

Tugs and an ample supply of lighters are available for handling cargo.

Between Purian Point and Baragua Point, the S extremity of the Pyapon District, about 55 miles to the E, the coast is indented by many of the outlets of the Irrawaddy River, including the Hetkethaung River, the Ywe River, the Pyamalaw River, the Irrawaddy River, and the Bogale River, five of its principal mouths. This section of coast is low and nothing conspicuous is visible from outside the shallow banks which front it.

A bank, on which the depths are less than 5.5m, fronts the whole coast between Purian Point and Baragua Point and extends as much as 17 miles offshore from a position about 10 miles W of the latter point; numerous drying patches lie on the E part of the bank including Baragua Flats, which extend about 8 miles SW from Baragua Point. The coast is not visible from the S extremity of this bank.

Vessels should not approach this section of coast in depths of less than 18.3m.

Baragua Point has been reported to be a good radar target up to 29 miles.

The Gulf of Martaban

8.9 The Gulf of Martaban is entered between Baragua Point and the coast extending N abreast of Kalegauk Island, about 140 miles to the E. The Sittang River flows into the head of the gulf, about 75 miles N of the entrance. The Rangoon River and the Moulmein River enter the sea on the NW and E sides, respectively, of the gulf.

The entire area of the gulf is shallow and anchorage can be taken anywhere with a suitable draft, but prior to anchoring the direction of the tidal current should be noted and very little chain veered until the vessel stems it.

In 1981, a dangerous wreck was reported to lie in position 15˚20'20"N, 96˚36'12"E, about 60 miles SSE of Rangoon River Western Channel Entrance.

In 1985, natural gas was discovered in large quantities up to 100 miles offshore in the Gulf of Martaban.

From Baragua Point, the coast extends NE for about 35 miles to the mouth of the Pyapon River, the W outlet of the China Bakir River, and then ENE for about 23 miles to the main outlet of the China Bakir River, which enters the sea through extensive mud flats.

U Pe Beacon (15˚44'N., 95˚24'E.) lies about 4.5 miles ENE of Baragua Point and 1.5 miles inland. Pymbong Beacon lies near the coast about 6.8 miles ENE of U Pe Beacon.

8.10 **Krishna Shoal** (15˚41'N., 95˚37'E.), with a least depth of 2.3m, extends about 12.5 miles NE as a narrow ridge of hard sand, from a position about 11 miles SE of U Pe Beacon.

Sanda Lightship is moored 7.5 miles ESE of the SW end of Krishna Shoal, but was reported (1978) to lie 7 miles NE.

A mud volcano, the position of which is approximate, was reported to lie about 30 miles ENE of Pymbong Beacon.

A 9.1m detached patch was reported to lie about 43 miles ESE of Pymbong Beacon.

The **China Bakir River** (16˚19'N., 96˚06'E.) entrance may be identified by a clump of coconut palms on the W side and by Kanyingon Village on the E side. A ruined pagoda stands in the village and Tazaung Tower stands about 2.5 miles farther E. Bassein Creek, navigable by small craft at HW, branches off from the main outlet of the China Bakir River about 2.5 miles within the entrance and connects with the Rangoon River about 10 miles below the city of Rangoon.

An extensive mudbank, which dries, fronts the coast between the mouth of the China Bakir River and Elephant Point and extends up to 4.5 miles offshore. This mudbank, Dedaye or Desaing Flats, and formerly China Bakir Flats, form the SW part of the bank and Mye Saon Sand the NE part. The remains of China Bakir Light are near the SE point of the bank. The Flats form the NW side of Western Channel.

The Rangoon River—Approaches

8.11 **Elephant Point** (16˚28'N., 96˚20'E.), about 16 miles NE of the entrance of the China Bakir River, marks the W side of the entrance of the Rangoon River.

Elephant Point Tower stands 0.3 mile SW of the point; another tower stands 0.5 mile farther SW.

Grove Point (16˚30'N., 96˚23'E.) which lies on the E side of the entrance of the Rangoon River, is low and lies about 3.5 miles ENE of Elephant Point. The low land on both sides of the entrance of the river is not visible from seaward until about 7 miles from the coast.

Beacons stand on Spit Sand, about 2.3 miles S and 4.5 miles SSW, respectively, of Elephant Point and are reported to be conspicuous. These white, conical, framework beacons with black topmarks stand on black bases. A survey beacon stands close offshore, about midway between the entrances of the China Bakir River and the Rangoon River.

Winds—Weather.—The winds at the entrance of the Rangoon River are NE in December and veer E, blowing fresh during the day. The weather is generally good. In January the wind is more N, but sometimes a strong E wind prevails for several days. Towards the end of the month, light land and sea breezes are observed in conjunction with thick and hazy weather.

In February and March, the land and sea breezes are regular. Near the shore the sea breezes are fresh and generally the strongest at the time of spring tides. Thick fogs prevail.

The Southwest Monsoon commences about the middle of April. After a few stormy days the weather is clear until the beginning of May, when the monsoon develops fully and continues with few breaks until the end of October. In May and October, there is heavy but not continuous rainfall; in July and August continuous rainfall is often experienced.

Tides—Currents.—Tides in the approaches to and in the Rangoon River are semidiurnal.

Between a position about 22 miles SSW of Baragua Point and the entrance of the Rangoon River, the tidal currents set NE and SW, on the flood and on the ebb, respectively. During the Northeast Monsoon, the velocity at springs is 2 to 4 knots; near the entrance of the Rangoon River the velocity is greater. The ebb current is the stronger. Occasionally in October and November, a W set is observed sufficiently steady and strong enough to overcome the flood which sets to the NE.

There are rotary tidal currents, which shift clockwise, off the mouths of the Irrawaddy River and off Baragua Flats. During the Northeast Monsoon, these currents attain velocities of 1.5 to 2 knots at springs and about 0.8 knot at neaps. Close to the

mouths the tidal currents set in and out of the channels, attaining their greatest velocities at HW and LW.

In the vicinity of the pilot vessel station, about 20 miles S of Elephant Point, the flood current sets about 034˚ and the ebb about 214˚. The time of HW in this vicinity occurs about 1.5 hours earlier than at Elephant Point.

In Western Channel the flood current begins setting NE toward the entrance of the river, but after the flats nearby are covered, about 2.5 hours after LW, the flood current changes direction and sets strongly onto Mye Soan Sand over which it runs directly for Elephant Point. The velocity at springs is 5 to 6 knots.

Considerable eddies may be experienced off Elephant Point, especially on the first of the flood. The great body of the flood passes E into the Sittang River. In Eastern Channel the flood current is comparatively weak and sets in 0.3 to 0.5 hour later than the flood current in Western Channel.

The ebb current sets SW in Western Channel outside Elephant Point. In Eastern Channel the ebb sets SE at first and then rounds the SE edge of Eastern Sands and sets SW. The velocity of the ebb is 6 knots at springs. Southeastward of Elephant Point the ebb currents set across the channel onto a part of Eastern Sands.

A tide gauge and a tide gauge tower stand on Elephant Point.

Depths—Limitations.—Changes in the depths and in the positions of the flats and shoals in the Rangoon River and its entrance are so constant that the chart must be used with great caution. A shifting bar, with fluctuating depths, obstructs the approaches to the entrance of the river. The bar has a soft silt bottom.

The 11m curve lies about 26.5 miles S of the river entrance; depths within this curve shoal gradually toward the flats which lie in the river mouth and on either side of the main fairway.

Eastern Grove Flats (16˚28'N., 96˚28'E.), an extensive drying bank, extend almost 7 miles SE from Grove Point. These flats form the E side of a channel which lies between the flats and Eastern Sands. A shoal area, with depths of less than 5.5m, extends up to 8 miles farther SE from the S edge of Eastern Grove Flats.

A detached 4.6m patch lies about 20 miles SE of Grove Point. Depths in this vicinity have been reported to have shoaled considerably.

Eastern Sands (16˚26'N., 94˚24'E.), a shoal which dries up to 2.4m in places, lies on the E side of Eastern Channel between 2 and 7 miles S of Grove Point.

A flat, which dries 0.3m, lies about 5.8 miles SSW of Grove Point.

The entrance channels leading into the Rangoon River shift frequently as the result of excessive silting. The navigational aids which mark these channels are moved as necessary to conform to these changes. Buoys may be missing or unlit.

Western Channel is the main channel for entry into the Rangoon River. The channel is approached via Lanthaya Light Float (Fairway Light Float) and Lower Light Float. The channel then leads N for 12 miles, converging with Desaing Flats and Mye Saon. The channel is marked by a light float and by lighted buoys, a number of which have been reported unlit.

Eastern Channel, an unmarked fairway with a least depth of 2.4m, lies between Eastern Grove Flats and the E side of Eastern Sands.

Pilotage.—Pilotage is compulsory for merchant vessels of over 200 grt.

The following information required by the Harbor Master Port Trust Rangoon, should be radioed not less than 48 hours, with changes radioed not less than 24 hours, prior to arrival:

1. Vessel's ETA at the pilot station.
2. Fresh water draft fore and aft.
3. Speed.
4. GRT.
5. Length overall.

The pilot vessel is usually at anchor about 20 miles S of Elephant Point. In the vicinity of the pilot vessel, the current sets about 034˚ during the flood and 214˚ during the ebb.

Vessels of 8m draft and over must anchor S of Lanthaya Light Float (Fairway Light Float) and await instructions.

A vessel approaching the pilot vessel to obtain a pilot should pass astern of and never ahead of the pilot vessel; when in this position, the vessel should make a lee for the boarding boat to the prevailing weather.

To enable vessels to locate the pilot vessel during thick weather, whether at anchor or underway, on the sound of a vessel's whistle or siren being heard, the pilot vessel will sound, on its whistle or siren, two long and two short blasts (letter Z of the Morse code), and will repeat this signal at such intervals, and for so long a period, as may be necessary to enable the approaching vessel to locate the pilot vessel.

Anchorage.—Deep-draft vessels, awaiting a pilot or anchoring for other reasons, should anchor SE of Lanthaya Light Float. In good weather, sea and swell permitting, medium-draft vessels may anchor about 2 miles E of **Lanthaya Light Float** (Fairway Light Float) (16˚12'N., 96˚17'E.)

Deep-draft vessels drawing over 7.3m may not anchor at the pilot station. A message from the pilot vessel will advise of a safe anchorage and also when to return to embark the pilot.

Signals.—The pilot vessel is radio equipped and displays the following signals:

1. By day—The regulation pilot flag (Hotel) and, if at anchor, a black ball.
2. At night—Lights and signals as prescribed by the Regulations for Preventing Collisions at Sea.

Directions.—A vessel approaching the Rangoon River from the W should pass about 5 miles S of Alguada Reef and then steer to pass about 26 miles S of Baragua Point. Course may then be altered to the NE to make for a position 8 miles S of Rangoon Pilot Station, passing approximately 2 miles SE of Sanda Light Vessel. Once S of the pilot station, course should be altered N for the pilot vessel and then NNE to pass E of Lanthaya Light Float (Fairway Light Float) and into the river entrance.

During February and March, when thick fogs are liable to occur, great caution is necessary when approaching the entrance of the Rangoon River, as there is not a sufficiently marked change in the depths in the channel to enable a vessel to determine its position by sounding.

Vessels approaching the Rangoon River from the E should keep in depths of 10.1 to 11m until the position has been ascertained. Consideration must be given the tidal current, remembering that the flood or NE current sets very strongly toward and over the shallows of the entrance of the Sittang River.

Caution.—Soundings are not an accurate guide in approaching the entrance of the Rangoon River. It is important to remember that the shore of the Irrawaddy Delta is so low as to be invisible until within a few miles of it and that shallow banks extend in places to considerable distances offshore. During February and March, when thick fogs are frequent, great caution is necessary when approaching the entrance.

Changes in depths in the river and approaches are so rapid and frequent that charts of the area should not be taken as a sure guide.

Dangerous wrecks lie approximately 4 miles S of Thuriya Lightfloat and 11 miles ENE of the charted position of Sanda Light Vessel. Numerous wrecks, best seen on chart, lie ESE of Lanthaya Light Float. The partially submerged wreck of the Dagon Light Vessel lies approximately 12 miles SSW of Lanthaya Light Float. A large navigational buoy (LANBY) is anchored near the wreck.

The Rangoon River to Rangoon

8.12 The Rangoon River, the E channel through the Irrawaddy Delta, flows into the Gulf of Martaban between Elephant Point and Grove Point. The river channel leads in a general NNW direction from Elephant Point to the port of Rangoon, about 21 miles above the entrance. Most of the low, flat, and sparsely-wooded land bordering the river consists of rice paddies. Compact clumps of trees lie in the vicinity of the villages.

Winds—Weather.—The climate in Rangoon is tropical throughout the year, with three distinct seasons, which are the monsoon period, the cool period, and the hot period.

During the monsoon season (Southwest Monsoon), from about mid-May through September, Rangoon receives most of its average 2,700mm rainfall for the year. Temperatures are moderately warm, 24˚ to 32˚C, but the humidity is very high.

After a brief period of warm, humid weather following the monsoon, the cool season begins about mid-November. From this time until March, the weather is pleasantly cool, 18 to 29˚C, and dry with low humidity. Days are sunny with the nights being cool and the weather is clear.

Beginning in March the temperature and humidity commence to rise uncomfortably and the dry land bakes in the hot season until the first of the monsoon rains bring relief. During this season the temperature may rise to 41˚C, although the average would be about 35˚C.

Tides—Currents.—Tides at Rangoon are semidiurnal. The Rangoon River tides are subject to a large diurnal inequality; the times of HW and LW may occur as much as 1 hour before or after the computed times. The rise and fall of the tide at the port as well as near the entrance of the river is considerable.

Several tide gauges stand on the banks of the river between its entrance and the anchorage S of Hastings Sand.

A tide gauge and a tidal semaphore stand in the harbor, about 0.3 mile W of Monkey Point.

The position of the three arms of the tidal semaphore, as observed from S, indicate the height of the tide above LWS tide level, as follows:

1. Upper arm
   a. Inclined to the right at 45˚ angle—1.8m.
   b. Placed horizontally to the right—3.7m.
   c. Inclined to the right at 45˚ angle below horizontal—5.5m.
   d. Inclined to the left at 45˚ angle—7.3m.
2. Center arm
   a. Inclined to the right at 45˚ angle—1.8m.
   b. Placed horizontally to the right—3.7m.
   c. Inclined to the right at 45˚ angle below horizontal—5.5m.
   d. Inclined to the left at 45˚ angle—1.2m.
   e. Placed horizontally tothe left—1.5m.
3. Lower arm
   a. Inclined to the right at 45˚ angle—0.09m.
   b. Placed horizontally to the right—0.18m.
   c. Inclined to the right at 45˚ angle below horizontal—0.27m.

In the river, the current follows the course of the channel. Along this course, during spring tides, there are strong eddies off the points of land; the tidal currents attain excessive velocities.

Close within the entrance of the river above Elephant Point, the channel is confined between Middle Bank and the W bank of the river; here the flood current attains velocities of 5 to 6 knots at springs. Above Middle Bank the velocity decreases.

The tidal current attains its maximum velocity of 5 to 6 knots in the channels on the night of the second day after full or new moon. The interval of slack water is only a few minutes. After neap tides the tidal current gradually increases in velocity and is rapid until the moon quarters, when the velocity suddenly decreases. On the second and third day after the moon quarters, there is slack water on the flood current for 1.5 hours and for 1 hour on the ebb.

At springs, the flood current sets in abruptly and the tide rises 1.8m in the first hour. During this period the ebb current continues running in mid-channel; slack water occurs at the end of this hour. The flood current turns earlier inshore than in mid-channel.

The effect of the rains which augment the river during the rainy season, June to September inclusive, is to weaken the flood current and strengthen the ebb. At times the flood current is weakened to the extent that vessels moored in Rangoon Harbor do not swing to it.

During spring tides, at times other than the rainy season, tidal currents in the harbor may attain velocities of 5 to 6 knots. The flood current commences about 0.5 hour after time of LW and the ebb about 1.3 hours after time of HW.

Tidal bores, about 0.9m high, sweep up the Pegu River in the sudden rising of the early flood, especially in February, March, and April.

Depths—Limitations.—The port of Rangoon is accessible to ocean-going vessels drawing 9.1m, subject to tide and monsoon conditions. A draft of 8.5 to 9.1m can be taken over the bar at Monkey Point during spring tides, however; in early 1967, because of heavy silting, the maximum draft that could be taken over the outer bar was reduced to 7.9m. The bend in the channel at Monkey Point imposes a maximum length limitation of 182.9m to vessels which can be safely taken through the channel in this vicinity. There is no beam restriction. Vessels over 183m in length are usually moored off Hastings Sand.

Night navigation on the river is practicable up to within the harbor limit, S of Hastings Sand.

Bars in the river, caused in part by excessive silting, cause fluctuations in the depths. Usually the controlling river depths over the bars range between 7.3 and 9.4m at HW, but vary depending on the tides which have considerable variance throughout the year. The maximum depths occur toward the end of the monsoon season, August to November. The minimum depths occur prior to the monsoon season, February to May.

The positions of the bars and banks, as well as the depths over them, are constantly changing; the chart should not be accepted as completely accurate and up-to-date.

Draft limitations are calculated according to the prevailing depths over the bar at the entrance of the river. Provisional drafts, subject to change without notice, are forecast for each month.

The description of the Rangoon River between its entrance and the port of Rangoon is confined to the shoals and banks in mid-river. Navigational aids mark most of these dangers.

Middle Bank (16˚30'N., 96˚20'E.), a continuation of Eastern Sands to the NW, lies in mid-channel with its NW end about 4.5 miles NW of Elephant Point. The whole bank dries from 0.3 to 3.7m. The SW or fairway side of this bank is marked by buoys.

Hmawun Lumps (16˚34'N., 96˚15'E.), which dry from 0.3 to 1.2m, lie on the E side of the main channel about 2 miles NW of the NW extremity of Middle Bank.

A small shoal, with a least depth of 5.2m, lies on the W side of the main channel about 1.3 miles NNW of the N end of Hmawun Lumps.

D'Silva Shoal (16˚38'N., 96˚15'E.), with a least depth of 0.6m, lies on the NE part of a narrow bank with depths of less than 5.5m, which parallels the W bank of the river. The S end of this bank lies 2.5 miles NNW of Hmawun Lumps and the N end closes the shore about 3.3 miles to the N.

A line drawn between Sinha's Beacon, on the shore abreast of the N end of the above bank and North Beacon on the opposite shore, marks the S limit of Rangoon Harbor.

An obstruction, with a depth of 7m, lies about 1 mile E of Sinha's Beacon.

Chokey Shoal (16˚41'N., 96˚14'E.), with depths of less than 5.5m, lies in the middle of the river with its S end about 1.5 miles NNW of Sinha's Beacon.

Chokey Track, which leads between Chokey Shoal and the E bank of the river, is subject to sudden shoaling and may have depths of less than 3.7m between August and March.

Falan leading lights, in line bearing 136˚30' astern, stand 0.5 mile S of Devil's Hole. A mooring buoy lies close NE of this alignment 1.5 miles NW of Falan front light.

Hastings Sand (16˚44'N., 96˚13'E.), a drying bank about 1 mile long, lies on the W side of the main fairway about 5.5 miles NNW of Sinha's Beacon.

Kings Bank Sand (16˚44'N., 96˚12'E.), a similar drying bank, lies about 0.5 mile SW of Hastings Sand.

The **Pegu River** (16˚46'N., 96˚13'E.) flows into the Rangoon River between Thanlyin Point and Pegu Point. Thanlyin Point lies on the E bank of the river about 1 mile NE of Hastings Sand, and Pegu Point lies about 1 mile NE of Thanlyin Point. The Pegu River is navigable by light-draft vessels only.

Monkey Point (16˚46'N., 96˚12'E.), the SW entrance point of Pazundaung Creek, lies at the E end of the city of Rangoon about 0.5 mile SW of Pegu Point. The port of Rangoon comprises a 3.5 mile-long section of the Rangoon River W of Monkey Point. A beacon stands on Mower's Point, on the S bank of the Rangoon River, about 3.3 miles W of Monkey Point.

Twante Canal (16˚46'N., 96˚08'E.) is entered close W of Mower's Point and Kanaungto Creek is entered about 0.5 mile W of the point. The NW limit of the Port of Rangoon is defined by beacons on both shores of the creek about 3.5 miles NW of Mower's Point.

Rangoon (Yangon) (16˚46'N., 96˚10'E)

World Port Index No. 49650

8.13 Rangoon (Yangon) is the capital, chief city, and principal port of the Union of Burma. It lies on the N bank of the Rangoon River, between Monkey Point and Kanaungto Creek 3.8 miles to the W.

Modern alongside berthing facilities are provided as well as numerous mooring berths in the river abreast of the city.

The port of Rangoon is a first port of entry.

Depths—Limitations.—Wrecks and obstructions still exist in the river abreast of the city of Rangoon, especially between positions 1.3 and 3.3 miles W of Monkey Point.

Between positions about 1 and 1.8 miles W of Monkey Point, depths in the river range from 6.4 to 9.1m. These depths exist abreast of the small wharves closest to Monkey Point, but are subject to rapid change because of heavy silting. Farther W, abreast of Brooking Street Wharfand Sule Pagoda Wharf, the depths range from 7.6 to 12.2m. Abreast Mower's Point, the depths range from 9.1 to 18.3m.

The following wharves are available for ocean-going vessels:

1. Sule Pagoda Wharf Berth No. 1 through Sule Pagoda Wharf Berth No. 7 can accommodate seven vessels, with depths alongside of 7.3 to 9.1m
2. Brooking Street Wharf, which can accommodate two vessels, has alongside depths of 7.3 to 9.1m and provides container handling facilities.
3. Ahlone Wharf can accommodate one vessel, with depths alongside of 7.9 to 8.5m. This berth is used solely for loading rice.
4. Hteedan Wharf No. 1 can accommodate one vessel, with depths alongside of 7.9 to 9.1m.
5. Hteedan Coal Berth can accommodate one vessel, with depths alongside of 7 to 8.5m.
6. A pontoon jetty at the Port Health Station, with a large floating pontoon 152.4m long, can accommodate one passenger vessel,with depths alongside of 7.6 to 8.5m.

Two tanker berths are available; one can accommodate a vessel 160m long with a draft of 8.7m and the other can accommodate a vessel 171m long with a draft of 7.9m.

Numerous mooring buoys in the harbor W of Monkey Point provide fixed and free-swinging berths.

The maximum length of vessel that can be accommodated, due of the spacing of the mooring buoys, is 168 to 175m. Vessels with slightly longer lengths can be accommodated by removing a buoy.Mooring buoys are laid for large vessels in the river off Syriam.Vessels secure to the pendants with their own cables; all mooring shackles must be in good working order.

Pilotage.—General pilotage information applicable to the approaches to the Rangoon River has been previously described in paragraph 8.11.

Near the river bend abreast of Monkey Point, a harbormaster and mooring crew take over direction of the inbound vessel from the pilot. The vessel is berthed alongside a wharf, anchored, or moored to buoys at the discretion of the harbormaster. Unmooring is accomplished by a similar crew. Berthing operations within the harbor are limited to daylight hours.

Masters of vessels preparing to depart must apply for a pilot at least 24 hours prior to the time of sailing. Immediately after a vessel has cleared its moorings or otherwise cast off, the outbound pilot takes over direction of the vessel.

Regulations.—Port officials board vessels off Monkey Point.

The boarding pilot will hand the master a book of port rules and regulations. This book will cover in detail the majority of the vessel's activities in the port of Rangoon, as well as items of general information. Fines are imposed for violation of many of the rules; a close study of them is obviously important.

Signals.—Vessels intending to transit Monkey Point Channel during daylight should display the International Code Flag Signal BB when passing Dry Tree Point. If the intentions of the vessel are changed, the signal should be lowered for the information of outbound vessels.

Storm and weather signals are displayed from a flagstaff near the port commissioner's offices; the Indian Extended System is used.

Anchorage.—Anchorages for cargo vessels, vessels carrying explosives, vessels carrying dangerous petroleum products, and quarantine anchorages are described in the port rules book.

The anchorage for vessels carrying explosives lies in the E side of the river NW of Chokey Point.

The lower quarantine anchorage, the same as that for vessels carrying dangerous petroleum products, lies in the E side of the river NNW of Chokey Point and N to Hastings Sand. This anchorage is used by vessels awaiting favorable tide conditions to cross the bar at Monkey Point; vessels also use the anchorage for topping-off purposes.

The upper quarantine anchorage lies in the harbor W of Monkey Point.

Caution.—Submarine pipelines are laid across the mouth of the Pegu River and close within the mouth of Pazundaung Creek; anchorage is prohibited in these areas.

Two submarine cables border the limit of the harbor in the Pegu River.

The Irrawaddy River

8.14 The navigable length of the Irrawaddy River and its branches totals about 800 miles from the sea to Bhamo. Intensive traffic is carried on by native craft and by river craft of varying draft belonging principally to the Inland Waterways Transport Board. This traffic is facilitated by the rise of the river due to seasonal heavy rains.

Ocean-going vessels, as a rule, proceed no farther than the ports of Bassein and Rangoon, where the industrial and maritime activities of the entire region converge.

Changes in the channels, the depths, and the velocity and direction of the current are so frequent and so marked that navigation of the Irrawaddy River is always complicated. For example, different routes between the same two river towns often exist; the route is selected only after considering the draft and length of the craft and the season of the year, dry or rainy.

Craft with drafts of 1.2m can reach Bhamo at all seasons; craft with drafts of 1.8m can reach Thayetmo. The passage was once accomplished in July by a vessel drawing 3.1m.

Tides—Currents.—The tidal influence is observed as far as Danubyu, about 70 miles from the coast.

The seasonal rise of the river begins in March and attains its maximum height in September. At Prome, 318 miles above Rangoon, the mean high level is about 1m above the dry season level. The rise varies, but as a rule the rise below Prome is somewhat less and above Prome, it is somewhat more than the mean high level.

The average velocity of the river current is 3 knots in portions of the river above the limit of the tidal influence. At some points it is 5 to 6 knots and at Akauktaung (18˚25'N., 95˚11'E.) a velocity of 7.5 knots has been recorded in August.

Pilotage.—The frequent fluctuations of the river can be closely followed only by the local pilots, of which many are natives. Each pilot is qualified for a portion of the river about 65 miles long. They are considered trustworthy.

Mandalay (21˚59'N., 96˚08'E.), about 350 miles N of Rangoon, is the headquarters of the division and district of Mandalay as well as the chief city of Upper Burma. Mandalay is connected to the railway and telegraph systems; river steamers communicate regularly with the city. The following table gives the names of the more important cities and towns on the waterway and the distances, in miles, by river.

Rangoon to Thayetmyo	305
Thayetmyo to Minhla	46
Minhla to Yenangyaung	40
Yenangyaung to Pagan	42
Pagan to Myingyan	40
Myingyan to Mandalay	65
Mandalay to Kabwet	56
Kabwet to Myadaung	70
Miles Myadaung to Modah	45
Modah to Bhamo	53
Rangoon to Bhamo (total)	762

The Gulf of Martaban

8.15 The Gulf of Martaban lies N of an imaginary line between Baragua Point and Kalegauk Island about 135 miles to the E. The gulf is relatively shallow within its limits, with the 20m curve lying about even with the imaginary line between Baragua Point and Kalegauk Island. Depths N of this curve decrease gradually N toward the shore and the mouth of the Sittang River.

The coast ENE of the entrance of the Rangoon River to the mouth of the Sittang River is low and fronted by an extensive shallow mud and sand bank. This area is very dangerous to shipping.

The Sittang River to the Tavoy River

8.16 The **Sittang River Entrance** (16˚50'N., 96˚55'E.) lies at the head of the Gulf of Martaban and is fronted by shallow, dangerous depths. Only native craft can transit the river. Canals within the entrance lead through the inland waterway system.

A dangerous bore sweeps up the Sittang River at spring tides and is often followed by an equally dangerous choppy sea.

The coast E of the entrance of the Sittang River and that part of the coast fronting the Gulf of Martaban SSE to the entrance of the Moulmein River is low and alluvial. From the entrance of the Moulmein River SSE to abreast of Kaleguak Island, the remaining coast is low with a few scattered hills of less than 305m high.

In the vicinity of the entrance of the Ye River, the hills become more numerous and mountain ranges begin to parallel the coast. South of the Ye River to Heinze Chaung, some conspicuous peaks rise from these ranges.

Southsoutheast of Heinze Chaung to the entrance of the Tavoy River, coastal ranges with prominent peaks continue to parallel the coast. Between Maungmagan Bay and Tavoy Point the bold, rocky coast is broken by many small indentations.

Depths—Limitations.—Depths of 11 to 18.3m lie off the coast between the SW shore of Bilugyun Island and the N end of Kalegauk Island.

Between Kalegauk Island and Tavoy Point, the 20m curve lies at distances of 11 miles to less than 1 mile offshore.

From a position about 10 miles W of the entrance of the Heinze Chaung, the 40m curve is charted in a very irregular pattern to the W. Toward the Gulf of Martaban, depths of less than 36.6m lie N of the curve.

Between Heinze Chaung and Tavoy Point, the 40m curve lies at distances of about 7 to 24 miles offshore. All of the offlying islands and dangers between Bilugyun Island and Tavoy Point lie inside the 40m curve.

Depths and dangers which lie inside the 20m curve are described in detail together with that part of the coast which they front. Ross Sand is the only exception.

Headlam Patch (15˚08'N., 97˚38'E.), which has a least depth of 11.9m, lies about 8.5 miles WSW of Pagoda Point and is about 2.5 miles long and 1 mile wide.

Shearme Sand (15˚04'N., 97˚35'E.), a long, narrow shoal with a least depth of 11m, lies about 12.8 miles SW of Pagoda Point.

Ross Sand (14˚55'N., 97˚41'E.), a narrow shoal about 9 miles long, with depths of less than 11m, lies with its N end about 5 miles W of Da That Island. The N part of the sand has a least depth of 3m and is usually marked by discolored water and tide rips. A narrow shoal, with depths of 11.9 to 18.3m, lies about 2 miles W of Ross Sand.

Sinclair Shoal (14˚53'N., 97˚21'E.), with two detached 9.1m patches, lies about 14.5 miles WNW of the S end of Ross Sand.

The Moscos Islands

8.17 The **Moscos Islands** (14˚10'N., 97˚48'E.) comprise three groups of uninhabited islands known as the Heinze Islands (North Moscos), the Maungmagan Islands (Middle Moscos), and the Launglon Bok Islands (South Moscos). The groups lie parallel to the coast for a distance of 42 miles with North Island, the N island, lying about 14 miles SSW of Kandaung Promontory. The group lies within the 40m curve and are generally steep-to on their W sides.

North Island (14˚28'N., 97˚47'E.), 138m high, is the N island of the Heinze Islands. Some rocks, 8.5m high, lie 0.5 mile NNE of North Island.

North Patch, which dries 2.4m, lies about 2 miles N of North Island. East Ledge, which dries 4.6m, lies about 1.5 miles E of North Island.

Heinze Bok, 312m high and the largest of the Heinze Islands, lies about 2 miles S of North Island. Two islands and some above-water rocks lie in between. Reef Islet, 51.5m high, lies 1.5 miles E of the S end of Heinze Bok. A rock, with a depth of less than 1.8m, lies close S of Reef Islet.

Bok Ye-gan (14˚16'N., 97˚49'E.), 359m high and the furthest S of the Heinze Islands, lies about 6.5 miles SSE of Heinze Bok. Two islets lie within 1 mile of the NE side of Bok Ye-gan and four islets lie between Bok Ye-gan and Heinze Bok.

The Maungmagan Islands comprise four densely-wooded islands. **Sabyat** (14˚12'N., 97˚47'E.), 119m high and the northernmost island of the group, lies 3.8 miles SSW of Bok Ye-gan. North Island, the largest of the group, lies 1 mile farther S. Pasut Kyun lies 0.5 mile SE of the middle of the SE side of North Island, and South Island lies 0.8 mile SE of the S extremity of North Island.

Kyank Butaung and Nghettaik Taung lie 3 miles E of North Island.

Maungmagan Passage (14˚00'N., 97˚50'E.), a deep clear channel with depths of 25.6 to 42.1m, lie between the Maungmagan Islands and Launglon Bok Islands.

North Island, Hngetthaik Kyun, and South Island are the principal islands of the Launglon Bok Islands. All lie close together in a N and S direction. Atema Kyun lies close off the E side of North Island; Kama Kyun lies close off the E side of South Island. All islands of the group are densely wooded.

Kyaukpyu Kyun (13˚46'N., 97˚55'E.), a jungle-covered rocky islet 49m high, lies 1 mile SE of the S extremity of South Island.

South Ledge, which dries 4.6m, lies about 0.8 mile S of the S extremity of South Island.

During bad weather, it is recommended that anchorage be taken E of Maungmagan Island, in depths of 16.5 to 21.9m, between Nghettaik Taung and South Island and, in depths of 16.5 to 18.3m, E of Sabyat Kyun.

Anchorage can be taken E of North Island of the Launglon Bok Group, in depths of 21.9 to 25.6m, with Atema Kyun bearing 350˚.

Moscos Channel (14˚30'N., 97˚51'E.) lies between the three groups of the Moscos Islands and the coast to the E. Depths in the fairway range from 18.3 to 36.6m, except at its N end E of North Ledge and North Patch, where the depths are less than 18.3m.

The Moulmein River

8.18 The **Moulmein River** (16˚09'N., 97˚31'E.) has its source about several hundred miles inland and discharges into the Gulf of Martaban between the S end of Bilugyun Island and the mainland. The Martaban River branches off from the Moulmein River abreast of the city of Moulmein and discharges into the gulf between the N end of Bilugyun Island and the mainland. This latter river is not navigable.

The entrance of the Moulmein River lies between Tounzoun Point and Amherst Point, about 9 miles to the S.

The port of Moulmein, about 26 miles N of the river's entrance, lies opposite the NE extremity of Bilugyun Island.

Depths—Limitations.—The river is generally navigable from the gulf to Moulmein by vessels drawing 3.7 to 4.9m at HWN and 5.8 to 7.3m at HWS. The draft varies according to the monsoon seasons. In 1960, vessels with drafts up to 7.6m entered the port.

Vessels approaching the entrance of the Moulmein River from the W should pass 6 to 8 miles S of Sanda Light Vessel in depths of 25.6 to 29.3m and then steer to make Double Island. This island should be passed a convenient distance to the W and kept bearing less than 153˚ until the lighthouse on Green Island bears 048˚, when the outer anchorage should be steered for on that bearing.

During March, when the land near the entrance of the Moulmein River is seldom seen from a greater distance than 0.5 mile, a landfall must be made well S of the entrance and a position off Double Island ascertained before shaping course for the river entrance.

In clear weather and often on a bright-moonlit night, the high mountains on the mainland E of Double Island may be sighted before the lighthouse or the light on Double Island.

In thick weather and during the Southwest Monsoon, the land a little S of Kalegauk Island should be made if the position of the vessel is doubtful. In bad weather, particularly at or near spring tides, vessels should not proceed to the anchorage off Amherst, but should pass inside of Kalegauk Island and anchor in Bentinck Sound.

When proceeding from Rangoon to the entrance of the Moulmein River in fine and clear weather, the lofty peak of the Zingyaik Range and the high land of Bilugyun Island and of Sin Taung may all be identified. In thick weather, especially during February, March, and April, it is advisable to make the land between Button Island and Setse Yele Paya.

Vessels frequently run aground on Bilugyun Sands in fog as a result of being too far N of the landfalls mentioned for approaches in thick weather. Soundings do not give warnings of the near approach to the banks, rocks, and shoals which border the E shore of the Gulf of Martaban.

When proceeding from Rangoon to Moulmein, great care should be exercised to allow for the strong tidal currents.

For a distance of about 10 miles S of Dolphin's Nose, vessels should not approach within 7 miles of the coast. The depths are less than 9.1m. Farther S, a closer approach to the coast may be made abreast Luce Hill and Sieve Hill.

Vessels transiting Moscos Channel during the day should pass E of North Ledge. At the S entrance of the channel, vessels should not pass between Kyaukpyu Kyun and South Ledge.

Tides—Currents.—Between the entrance of the Rangoon River and the Moulmein River, the flood current sets toward and into the Sittang River. On the Rangoon side of this area the set is NNE and N; on the Moulmein side the set is NNW. The general direction of the flood current in other parts of the Gulf of Martaban is NNE. It becomes more N as the E shore is approached; within a distance of 10 miles it parallels the shore. The ebb current in all parts of the gulf sets almost invariable in a direction opposite to that of the flood current. The velocities of the tidal currents at springs increase from 2 to 3 knots in depths of over 36.6m to from 6 to 7 knots in 16˚15'N., 97˚00'E. During and immediately after the Southwest Monsoon, the duration and velocity of the ebb current are increased and those of the flood current are decreased. The duration of slack water at springs does not usually exceed 0.5 hour.

In the approaches to the entrance of the Moulmein River the flood current sets N along the coast. The ebb current at first sets WSW and then S. The velocity of the ebb current is considerable as a result of the flow from the Sittang River and the Moulmein River.

In the vicinity of Double Island, the flood current sets N and the ebb S. The velocity at springs is 4.5 knots and neaps 2 knots. The tidal currents turn about 0.5 hour later than at Amherst Point.

Tidal currents attain velocities of 3 knots at springs in the channel between Hnetthalk Kyun and the mainland W of Tavoy Point.

8.19 The coast E of the entrance of the Sittang River is low and backed by the Zingyaik Mountains, which roughly parallel the coast about 9 miles inland N of Biligyun Island. Pagodas stand on the northernmost summits which have the greatest elevation.

As the mountains rise a considerable distance inland from navigable waters, their value as navigable aids are greatly reduced. However, on a clear day they are visible up to distances in excess of 50 miles.

Bilugyun Island (16˚23'N., 97˚31'E.), about 17 miles long and 8 miles wide, has a range of wooded hills on its N part which attain elevations of over 180m. Several isolated lower hills rise in the S part of the island. Steep-to shoals front the W side of the N part of the island as far as 4 to 5 miles offshore. Touzoun Point and an unnamed point about 0.8 mile to the E are the S extremities of Bilugyun Island.

Under normal conditions, the length of a vessel entering the port is limited to 137.2m if a single-screw vessel and 144.8m if a twin-screw vessel. Reports indicate a vessel with a length of 152.4m may be taken to Moulmein under ideal conditions.

The navigable depth available is related to the power of the vessel. Because of strong cross-channel currents, the deepest channel is not always available to vessels not capable of a 10-knot speed.

Entrance into the river at night is not permitted. No vessel should attempt to enter the river without a pilot on board.

During the monsoon season, the maximum sailing draft from Moulmein, in May to September, ranges from 4.6 to 7.4m. During the dry season, October to April, the draft ranges from 3.4 to 6.9m.

Winds—Weather.—From July to September, the weather is stormy. In December, January, and February, the winds are light and the weather is fine.

The mornings and evenings of days in January are misty; towards the end of the month the weather becomes foggy. Fogs become thick and frequent toward the end of February and throughout March. During this interval, they last at times for 3 or 4 days and obscure even the banks of the river.

When the farmers burn waste-paddy straw, dense smoke further reduces visibility.

Rainfall is heavy between May and September.

Storm and weather signals are displayed from the port office flagstaff; the Indian General System is used.

Tides—Currents.—Tides at Amherst Point and Moulmein are semidiurnal.

Tides in the river to the port of Moulmein are subject to large diurnal inequalities and seasonal variations.

Tide gauges stand in the following positions:

1. Near the landing about 0.5 mile ENE of Amherst Point.
2. On the E bank of the river, about 7 miles NNE of Amherst Point.
3. Off the W side of New Kingyaung Island.
4. On the W side of the river, off the point at Nathmaw.
5. Off the E bank, about 0.5 mile SSW of Mupon Pagoda.
6. Off the port office at Moulmein.

These gauges are painted in red, black, and white bands which comprise a 1.8m section. To the top of the red band is 1.8m, and to the top of the white band is 0.9m. Each band is 0.3m high; the 0.6m black bands between the red and white bands have narrow white lines across the middle, marking two equal divisions of 0.3m each.

Each bar in the river has its own particular tide gauge, which is moved as the bar shifts.

The zeros of the tide gauges are set to the level of Indian Spring LW.

A tidal semaphore, 24.4m high and painted red, stands on the W bank of the river at Nathmaw, about 1 mile WSW of the S end of Yele Kyun. It is visible from the S end of Ameila Crossing, about 2 miles E of the S extremity of Hintha Kyun. Another semaphore, 15.2m high and painted white, stands at Thetkaw on the W bank, about 2 miles above Nathmaw. It is visible from the S from abreast the N part of Hintha Kyun and N from the berths off Mupon.

The system is the same as the one used in the Karnaphuli River and registers the rise of the tide during daylight hours.

In the offing abreast Amherst, the flood or N current commences about 0.5 hour after LW at Amherst Point; the ebb or S current commences about 0.5 hour after HW. The velocity of the current is 3.8 knots at springs and 2 knots at neaps. The interval of slack water is very short.

Off the entrance of the Moulmein River the flood current sets towards Longstones Reef; when the outer banks are covered it sets strongly E or NE over the sands.

Off Green Island during the dry season, the flood current commences at the time of LW at Amherst while the ebb current commences 1 hour after HW at Amherst.

During the dry season, the velocity of the river current is 3 knots. In the rainy season the velocity is higher; during August, the rains raise the level of the river to 8.5m and a velocity of 7 knots is attained.

At Anchoring Creek, on the E side of the river abreast the S end of Hintha Kyun, the flood current commences 2.3 hours after LW at Amherst; the ebb current commences 1.5 hours after HW at Amherst.

At Nathmaw, the flood current commences 3.2 hours after LW at Amherst while the ebb current 1.7 hours after HW at Amherst.

The durations of the flood and ebb tidal currents at Amherst are the same the year round.

Moulmein		
Time	Duration of	
	Flood	Ebb
October through January	4 hours	8 hours
February through May	5 hours	7 hours
June	3 hours	9 hours
July through September	There is no flood current except at maximum spring	—

Depths—Limitations.—Considerably less water than charted is reported to exist in the approaches to the entrance of the Moulmein River.

After every monsoon, marked changes are observed; alterations in the arrangement of the channel and the river banks occur and the bars are often found in new positions, with altered depths over them.

The entrance of the Moulmein River is greatly encumbered by extensive sand banks and reefs.

Drying banks of mud and sand, with shoals with depths of 5.5m and less on the seaward side of them, lie within a distance of about 3.8 miles SSW of Tounzoun Point. Similarly, the above dangers lie about 3 and 4 miles W and WNW, respectively, of Tounzoun Point.

8.20 Bilugyun Sands (16˚10'N., 97˚32'E.), which dry in places, cover most of the middle of the entrance and are separated from the shoals S of Bilugyun Island by a channel. This passage is sometimes narrow and shallow and at other times wide and deep. At such times it becomes the main channel leading into the river. The sands are steep-to on their seaward side and soundings give no warning when approaching them.

Goodwin Sands (16˚07'N., 97˚35'E.), which dry up to 3m, lie on the S side of the river entrance E of Bilugyun Channel and N and NE of Amherst Point.

Bilugyun Channel lies between Bilugyun Sands and Goodwin Sands. In 1966, there was a least depth of 6.4m in this channel at MLWS. Channel depths to Moulmein have charted depths of as little as 3m.

Longstones Reef (16˚06'N., 97˚32'E.), which has its outer edge about 2 miles NW of Amherst Point, consists of drying and sunken rocks, with depths of less then 5.5m.

An area of rocky shoals, with depths of 5.5m and less, lie within 0.5 mile WSW and 0.8 mile S of the outer edge of

Longstone Reef. A detached 8.2m patch lies 2.8 miles W of Amherst Point.

Devils Horn (16˚05'N., 97˚33'E.), a rock which dries up to 3.7m, lies between Longstone Reef and Amherst Point and about 1 mile NW of the latter. Foul ground and shoal patches, with depths of less than 5.5m, lie within 1 mile W to NW of Amherst Point.

Except at slack water, the channels between the rocks should not be attempted without local knowledge.

Green Island (16˚04'N., 97˚33'E.), about 1 mile SSW of Amherst Point, is surrounded by foul ground. An approach of less than 0.5 mile to the island is dangerous.

The coast up to several miles S of Amherst Point is fringed by foul ground which extends about 0.5 mile offshore in places. Shoal depths of less than 5.5m lie up to 1 mile offshore along this section of coast.

When approaching the Moulmein River Entrance, care should be taken to avoid the fishing stakes about 5 miles WNW of Tounzoun Point.

Aspect.—Tounzoun Point (16˚14'N., 97˚32'E.), on the N side of the entrance, is the S extremity of a ridge about 0.5 mile long which slopes toward the point from a height of about 51.8m. Kwanhla Pagoda stands on a hill about 1.3 mile NE of the point and is a good landmark. Two other pagodas stand on a hill about 0.8 mile E of the Point.

Amherst Point (16˚05'N., 97˚34'E.), on the S side of the entrance, is fronted by a bluff with an old pagoda on it. A conspicuous pagoda stands on piles on a drying reef close NNW of Amherst Point. Another pagoda stands near a cliffy point about 1 mile S of the point. Sin Taung, a 285m high hill, about 4.8 miles SE of the point, is conspicuous when viewed from the W. The village of Amherst stands just within Amherst Point.

During the month of March the land near the Moulmein River Entrance is seldom visible more than 0.5 mile.

The various channels and crossings between Bilugyun Channel and the port of Moulmein are subject to constant change and no detailed description will be made of them.

When entering the Moulmein River, red conical buoys indicate the E or starboard side of the channel and black can buoys indicate the W or port side of the channel.

The buoys are numbered consecutively from seaward; on each buoy is painted the initial letter of the channel it marks. The buoys are moved to conform to the channel which shifts with the seasons. After heavy freshets, the positions of the buoys may be unreliable.

Anchorage.—Anchorage can be taken outside the entrance of the Moulmein River, with Green Island Light bearing 090˚, distant 2 miles. Shelter is provided against the strong spring ebb current during freshets. The depths in this position are about 18.3m, mud, with good holding ground.

There are several anchorages in the river, but vessels must moor as they cannot lie at single anchor.

Anchorage can be taken by two vessels of not more than 137.2m in length, in a depth of 6.4m, at the N end of Long Island Channel E of the S end of Hintha Kyun.

Deep-draft vessels may moor off Natmaw, about 1 mile SW of the S end of Yele Kyun.

Mupon Anchorage lies off Mupon Pagoda, about 1.3 miles N of the N end of Yele Kyun, with depths (1964) of 11 to 12.8m. There are mooring buoys, for the use of naval vessels, close inshore, about 0.5 mile N of Mupon Pagoda.

Moulmein Anchorage lies abreast the town of Moulmein, about 2 miles N of Mupon Pagoda. There are three mooring buoys for vessels up to 152.4m in length and drawing up to 7m. There is also an anchorage berth for a vessel of up to 1,000 grt.

Anchorage can also be taken abreast of the N part of Moulmein, where there are three berths for vessels with drafts of 6.1 to 7.6m; a mooring buoy is available at this anchorage.

Pilotage.—Pilotage is compulsory for merchant vessels of over 200 grt displacement.

The pilot station is situated on Amherst Point. If arranged for in advance, a pilot is available on display of the usual day signal or by a blue light at night. Entrance into the river at night has been discontinued.

Vessels should send their ETA, draft, and speed about 24 hours before arrival to Port of Moulmein via Rangoon Radio. The pilot must travel to Amherst by launch or car. There is no pilot vessel

Pilots will board vessels in the vicinity of the outer anchorage, W of Green Island. It is advisable to arrive at the anchorage 2 hours before time of HW at Amherst and anchor while awaiting the pilot.

A pilot beacon, 1.8m high, which is a wooden mast with a white corrugated-iron topmark, stands about 0.2 mile SW of Water Pagoda. A light, for the use of the pilot only, is displayed from the mast.

A signal station is situated on Amherst Point; flags of the International Code of Signals are displayed from a mast.

Regulations.—There shall be no communication between any vessel, which is liable under Quarantine Regulations to display the International Code of Signals Flag L, and the shore of any other boat or vessel, except to receive the pilot and his servant and baggage, until permission is granted in writing by the Health Officer.

If there is a suspected case of plague on board or if more than two deaths from any cause have occurred during the voyage, the pilot anchors the vessel in Halfway Anchorage to await the Health Officer; in other cases vessels are anchored in the lower end of Mupon Reach.

Vessels which have, within a period of 2 months immediately preceding their arrival, started from or touched enroute at a port infected with yellow fever, or communicated, except orally without contact or by signal, with a vessel which is either infected with yellow fever, or communicated, except orally without contact or by signal, with a vessel which is either infected with yellow fever or which has left a port infected with yellow fever within that period, shall be allowed to anchor only at the outer anchorage W of Green Island.

Moulmein Harbor (16˚29'N., 97˚37'E.)

World Port Index No. 49660

8.21 Moulmein Harbor comprises a 4-mile section of the river from Mupon Pagoda N to Battery Point. The width of the river within the limits of the harbor range from 0.2 to 0.5 mile.

Moulmein, Burma's third-largest city and third-ranking port, lies on the E bank of river about 22 miles N of the entrance.

Ocean-going vessels capable of transiting the river load and discharge cargo at the mooring buoy berths in the river abreast of the city.

Moulmein is a first port of entry.

Depths—Limitations.—In 1966, the harbor depth in the middle of the fairway, other than the depths over Fairway Rocks and Town Rock, ranged from 4.9 to 2.5m. These depths are subject to change because of silting.

Mupon Reef lies close off the E bank of the river, almost 0.5 mile N of Mupon Pagoda. Patches of rock on this reef dry about 0.6m at LW during the dry season, February and March.

Sirrocco Rock, with a least depth of 2.4m, lies on the E side of the channel a little more than 1 mile N of Mupon Pagoda and about 0.4 mile off the E bank.

A rock, with a depth of 1.5m, lies on the E side of the channel about midway between Mupon Reef and Sirrocco Rock, and about 0.8 mile N of Mupon Pagoda.

Rocky, foul ground lies about 0.2 mile NE of Sirrocco Rock.

Fairway Rocks (16˚28'N., 97˚37'E.), with a least depth of 2.1m, lie in mid-channel about 0.3 mile NNW of Sirrocco Rock. A rocky patch, with a depth of 4.9m, lies midway between Sirrocco Rock and Fairway Rocks.

Wales Rock (16˚28'N., 97˚37'E.), with a depth of 0.9m, lies close off the E bank about 1.5 miles N of Mupon Pagoda. A 3.3m patch lies close NW of Wales Rock.

Castle Rocks (16˚28'N., 97˚37'E.), with depths of less than 1.8m and rocks awash at their S end, lie about 0.5 mile N of Wales Rock.

Town Rock (16˚29'N., 97˚37'E.), with a least depth of 1.8m, lies near mid-channel about 0.5 mile NW of Castle Rocks. A sunken rock, with depths of less than 1.8m in the vicinity, lies close offshore about 0.5 mile NNE of Town Rock.

A reef lies close off the E bank, about 0.3 mile SW of Battery Point which lies at the N end of the city. Depths of less than 1.8m surround the reef and border the shore in the vicinity of Battery Point.

The port has about 304.9m of principal wharfage, which consists mostly of small pontoons and finger piers.

Tavoy Jetty, a pontoon wharf about 76.2m in length with a depth of 4.9m alongside at LW, lies about 2.5 miles N of Mupon Pagoda.

Salween Wharf, a finger pier with a short outer face and a depth of 3.4m alongside, lies close N of Tavoy Jetty.

Moulmein Railway Jetty, about 0.3 mile N of Salween Wharf, is used primarily by local ferries.

Big Bazaar Jetty, 49m in length, is used only by river craft.

Numerous jetties line the shore between Mupon Pagoda and Battery Point, but are for the sole use of lighters and river craft.

Several small tugs and an ample supply of barges and lighters are available to work cargo at the river mooring berths.

Martaban, a shallow port area used exclusively by river craft and barges, stands on the W bank of the river about 2 miles N of Battery Point.

The N part of this section of coast between Amherst Point and Bluff Point, about 21 miles SSE, is high, rocky, indented, and marked by occasional cliffs. The low S part of the coast is covered with dense jungle growth.

Setse Yele Paya (15˚57'N., 97˚36'E.), a small islet close to the coast about 8.25 miles SSE of Amherst Point, is marked by a 21m high pagoda.

Button Island (16˚00'N., 97˚34'E.), 53m high and close offshore, lies about midway between Amherst Point and Setse Yele Paya. Sin Taung, a high peak about 2.5 miles ENE of Button Island, is a good mark from the W along this section of coast.

Bluff Point (15˚46'N., 97˚42'E.), which rises to a height of 100m, lies 12.5 miles SSE of Setse Yele Paya. A pagoda stands on a reef about 1.3 miles N of Bluff Point.

Double Island (15˚52'N., 97˚35'E.), lies about 12.3 miles S of Amherst Point and about 6.5 miles offshore. The island lies on the NW edge of a shoal, with depths of less than 11m, which is about 1.3 miles long and 0.3 mile wide. Less water than charted has been reported to exist in the vicinity of Double Island. Vessels when passing should give it a wide berth.

Caution.—Should the light on Double Island appear to darken for short intervals, it signifies that the lighthouse keepers require assistance. Notify the local authorities as soon as possible.

Double Island Light

8.22 **North Rocks** (15˚46'N., 97˚39'E.) consist of two groups of rocks, about 1.3 miles apart, which lie on a shoal about 3 miles WNW and a similar distance NW of Bluff Point. A rock in the S group is 6m high, but the N group dries up to 5.2m. The channel between North Rocks and the coast is unsafe and should not be attempted.

Pagoda Point (15˚37'N., 97˚44'E.), about 45m high, lies about 8.5 miles S of Bluff Point. Drying mud and sand flats extend up to 1 mile offshore between these points.

Evans Ridge, a range of coastal hills 91 to 128m high, extends 2 miles SE from a position 3.3 miles SSE of Bluff Point.

Kakana Taung (15˚41'N., 97˚43'E.), a small islet 55m high, lies 4.5 miles S of Bluff Point.

Bentinck Point (15˚29'N., 97˚44'E.), a low projection, lies 8 miles S of Pagoda Point. The coast between the points is fronted by shallows and drying flats which extend up to 1.5 miles offshore. A reef and sunken rocks extend about 1 mile NW from Bentinck Point.

Phaungkala Taung (15˚35'N., 97˚50'E.), 393m high and conspicuous, is the highest summit of an isolated range which rises about 6 miles ESE of Pagoda Point. Wara Taung, 440m high, lies about 8 miles ESE of Bentinck Point and is a useful mark for entering Bentinck Sound.

Kyaikhalaing Pagoda, 12m high, stands on a reef about 3 miles N of Bentinck Point. Another pagoda stands on a reef about 0.5 mile NW of the point.

Bentinck Sound

8.23 **Bentinck Sound** (15˚35'N., 97˚42'E.) lies between the coast to the E and Galloper Sand, Kalegauk Island, and Cavendish Island to the W.

Galloper Sand (15˚38'N., 97˚40'E.), as defined by the 2m curve, extends about 7.8 miles S from a position about 3.8 miles SSW of Bluff Point. Several drying patches lie within the limits of this shoal.

Kalegauk Island (15˚33'N., 97˚40'E.), lies close S of and is separated from Galloper Sand by a narrow clear passage. Portland Point lies at the N end of Kalegauk Island and at the NW end of the passage mentioned above. Kalegauk Summit rises to a height of 159m in the N part of the island and is a good landfall for vessels bound for Moulmein during the Southwest Monsoon. Kalegauk Island lies abreast of the S limit of the Gulf of Martaban.

Cavendish Island (15˚30'N., 97˚40'E.), 97m high, lies close S of Kalegauk Island.

South Shoal (15˚28'N., 97˚39'E.), about 2.8 miles long with a least depth of 8.2m, lies close S of the shoal extending about 0.5 mile S from Cavendish Island. A narrow passage separates the two shoals. An obstruction, with a least depth of 4m, was reported to lie on the outer edge of the NE part of South Shoal.

Tides—Currents.—In the N entrance of Bentinck Sound, the tidal currents attain a rate of 5 knots and set across the channel. Inside the sound the rates are 2 to 3 knots. The flood sets on the inner side of Galloper Sand and the ebb sets on the outer or seaward side.

Depths—Limitations.—The fairway depths in the N entrance of Bentinck Sound range from 10 to 16.5m, which has a least width of 0.3 mile. The S entrance has depths of 12.8 to 16.5m and a width of about 3 miles.

8.24 **Middle Ground** (15˚38'N., 97˚42'E.), a long narrow shoal with a least depth of 8.2m, lies in the middle of the N part of the sound with its S end about 1.8 miles W of Pagoda Point.

Kalegauk Island is generally steep-to seaward of the 10m curve which nowhere lies more than 0.5 mile offshore.

The Peepers, two small rocks close together and low, lie about 1 mile NNW of the S extremity of Kalegauk Island.

The best anchorage, sheltered from the Southwest Monsoon, lies in depths of 11 to 14.6m, about 0.5 mile E of the middle of the E side of Kalegauk Island.

Directions.—Deep-draft vessels without local knowledge are advised not to use the N entrance leading into the sound. Sufficient aids are not available to make good a course against the strong cross channel currents.

When entering the N entrance pass midway between the N end of Galloper Sand and the shallow LW fronting the coast N of Pulau Kropik by keeping the S end of Pulau Kropik in range 129˚ with Phaungkala Taung. When the N summit of Evans Ridge bears 078˚, pass between Galloper Sand and Middle Ground by steering 182˚. Consideration should be given to the set of the flood toward Galloper Sand and the ebb toward Middle Ground.

To enter Bentinck Sound by way of the S entrance, keep Wara Taung bearing not more than 078˚ until the E side of Kalegauk Island is open E of the E side of Cavendish Island, bearing more than 002˚. Course may then be shaped to the NNE to pass 1 mile E of Cavendish Island, having regard for the dangers S of that island.

Hope Point (15˚21'N., 97˚43'E.), about 8 miles S Bentinck Point, is rocky with a 110m high hill behind it. The bay between the two points is covered with mud and sandy flats which dry in places and extend up to 1.3 miles offshore in places.

The coast for about 6.8 miles S of Hope Point is cliffy and backed by heavily-wooded hills. Palein, a peak 521m high, lies about 4 miles SSE of Hope Point. Notched Peak, the highest of five summits, is 334m high and lies 3 miles S of Palein Hill.

Kokunye Kyun (15˚18'N., 97˚43'E.), 140m high, lies about 3.3 miles SSW of Hope Point. Shoal ground, with depths of less than 5.5m and parts of which dry, extend S from a position 0.5 mile NW of Hope Point to Kokunge Kyun.

Toby Rock (15˚16'N., 97˚43'E.), which dries to a height of 5.2m and is awash at HWS, lies about 2 miles S of the E end of Kokunye Kyun.

The Ye River

8.25 The **Ye River** (15˚11'N., 97˚47'E.) enters the Bay of Bengal between Pagoda Point and the W extremity of Sidaw Taung. Sidaw Point, on the S side of the entrance, lies about 0.5 mile NE of the W extremity of Sidaw Taung. The town of Ye stands about 8 miles above the river entrance.

Three sets of range beacons lead from the river entrance to within 1 mile S of Sonma Kyun.

A beacon, consisting of a white globe in a tree, lies on a point on the W side of the river, almost 1 mile N of Sidan Point. A prominent pagoda stands on the W bank about 1 mile N of the beacon.

The navigable channel of the river lies S of Sonma Kyun, a large island about 2 miles above the entrance. The river from its entrance to the town follows a winding course with many abrupt bends. Only short vessels can negotiate them. Local knowledge is required.

Pagoda Point (15˚12'N., 97˚46'E.) lies on the N side of the entrance of the Ye River and should not be confused with Pagoda Point on the E side of Bentinck Sound. From the NW, this point appears as a hummock at the end of a level stretch of beach. Rising steeply from the beach this 46m point is conspicuous. A pagoda stands on the point.

Sidaw Taung (15˚10'N., 97˚48'E.), a bold headland 176m high, lies about 1.8 miles SE of Pagoda Point, on the S side of the entrance of the Ye River. This headland appears flat-topped when viewed from the W and NW and conical when viewed from the S.

Damatha Taung, a 158m high headland, lies 9.5 miles S of Sidaw Taung. The coast between these two headlands is low, but the high ranges inland give it the appearance of being steep.

There are no recommended passages between the islands and sands which extend S and parallel the coast for about 22 miles from a position about 2 miles WNW of Pagoda Point and terminate in Ross Sand.

Soundings provide the best guide when passing seaward of Livermore Shoal, as it lies just within the 20m curve.

Pagoda Point, in line with the W slope of Sidaw Taung and a dip in the distant high land bearing 129˚, leads N of Livermore Shoal and the shoal N of Wa Kyun.

Tides—Currents.—The flood tidal current in the vicinity of the entrance of the Ye River sets N along the coast at a rate of about 3 knots at springs. The ebb sets S at the same rate. At springs, the water outside the islands is discolored.

Depths—Limitations.—Livermore Shoal, a 2.5 miles long ridge of hard sand with depths of 3.7 to 9.1m, lies with its least depth about 5.5 miles W of Pagoda Point.

Wa Kyun (15˚12'N., 97˚44'E.), the N island of the chain of islands which lies off the entrance of the Ye River, lies about 2 miles W of Pagoda Point. The N summit of two which lie on the island rises to a height of 135m. This island lies in about the middle of a shoal about 2.3 miles long with depths of less than 5.5m. Depths of 9.1m and less lie within a narrow tongue which extends 4 miles NNW from the N end of Wa Kyun.

8.26 Hngetpyaw Kyun (15˚11'N., 97˚43'E.), 46m high, small and wooded, lies almost 1 mile SW of Wa Kyun. Some rocks, which dry about 5.5m and are awash at HWS, lie about 0.2 mile NW of the N point of the island. Depths of less than 9.1m lie up to 1 mile N of the island.

Nat Kyun (15˚10'N., 97˚44'E.), 135m high, lies 0.5 mile SE of Hngetpyaw Kyun. A drying ridge of hard sand extends about 3.8 miles S from Nat Kyun. Depths of 9.1m and less lie from 0.5 to 0.8 mile off the W side of this ridge. The sea breaks heavily over the ridge. A drying bank, which breaks heavily, lies close N of Nat Kyun. The channel, which lies between Nat Kyun and Hngetpyaw Kyun on the SW side and Wa Kyun on the NE side, has a least depth of 9.6m but is not recommended.

Ghorparay Rock (15˚10'N., 97˚43'E.), which dries about 0.9m, lies about 0.5 mile W of the S end of Nat Kyun.

Pascoe Shoal (15˚10'N., 97˚45'E.), with a least depth of 0.9m over its central part, lies centered about 1.3 miles E of Nat Kyun. Depths over the remainder of this shoal are less than 5.5m. A detached 4.9m patch lies about 0.3 mile N of the N end of Pascoe Shoal.

Kyettaik Kyun (15˚10'N., 97˚45'E.), 24m high to the tops of the trees, lies about 1.3 miles SE of Nat Kyun. A narrow shoal, with depths of less than 5.5m, extends about 0.3 mile SW from the island.

8.27 Simpson Shoal (15˚08'N., 97˚45'E.), about 2 miles long and 0.3 mile wide with depths of less than 5.5m within its limits, lies about 0.8 mile S of Kyettaik Kyun. The E extremity of Nat Kyun in range 352˚ with the SW extremity of Wa Kyun leads through the S part of the channel between Simpson Shoal and the drying ridge of sand which extends S from Nat Kyun. The channel E of Simpson Shoal and Pascoe Shoal is preferred. Kyettaik Kyun, bearing 351˚ and open W of the high land near the coast to the N, leads E of Simpson Shoal.

Kyungyi (15˚05'N., 97˚44'E.), 2.5 miles long and marked by four distinct, wooded hills, lies about 4.5 miles S of Nat Kyun. The S hill is 163m high and the N hill is 76m high.

Shoal ground, with depths of less than 5.5m, lies up to about 1.5 miles W of Kyungyi. A tongue of shoal ground, with a drying sand ridge on its N half, extends about 5.5 miles S from a position about 1.5 miles W of the central part of Kyungyi. The sea breaks over the drying sand ridge.

Dathat Island (15˚00'N., 97˚46'E.), small in extent and 79m high, lies about 4 miles SSE of the S end of Kyungyi. Magyi Island, 44m high, lies about 3.3 miles SSE of Dathat Island.

Several small islets lie close S of Magyi Island.

Anchorage.—Anchorage can be taken in the channel between Kyungyi and the coast, in depths of 16.5 to 18.3m, with the N end of Kyungyi bearing 328˚, almost 1 mile distant.

Anchorage can be taken in the channel E of Wa Kyun, in a depth of 11.9m, mud, with the N extremity of the island bearing 299˚ and the S extremity bearing 215˚.

Anchorage can be taken E of Pascoe Shoal, in depths of 9.1 to 11m, with the E extremity of Kokunye Kyun in line bearing 339˚ with the W extremity of the mainland, located about 3.8 miles SSE of the E extremity of Kokunge, and Kyettaik Kyun bearing 212˚.

Directions.—If approaching from the N, steer to pass 1.5 miles W of Kokunye Kyun after sighting Kalegauk Island. When Wa Kyun is sighted, steer 147˚ for the N summit of the island. When Pagoda Point bears 129˚ and is in range with the W slope of Sidaw Taung and with a dip in the distant high land, steer for the point. This course leads about 0.2 mile N of the shoal which lies N of Wa Kyun. When the E extremity of Nat Kyun is open E of the E side of Wa Kyun and bears about 190˚, change course SSE for the anchorage E of Wa Kyun.

To arrive at the anchorage E of Pascoe Shoal, maintain the 129˚ course for Pagoda Point until the E end of Kokunye Kyun is in line bearing 339˚ with the W extremity of the mainland, located about 3.8 miles SSE of the E end of Kokunye Kyun. Then change course SSE, keeping the range astern, and steer for the anchorage. Note that the charted anchorage position is about 2.3 miles from the position where the stern range is picked up.

If approaching the entrance of the Ye River from the S, steer 000˚ for Kyungyi passing W of Magyi Island and E of Ross Sand. When Dathat Island bears 045˚, steer to pass midway between Kyungyi and the mainland. Pagoda Point, in line bearing 004˚ with a notched peak, 2.5 miles to the N of the point, leads E of Simpson Shoal to a position off the entrance bar of the Ye River, E of Pascoe Shoal.

The entrance bar from the NW almost dries and can be crossed by vessels only at HW. At springs, a vessel drawing 4m might reach the town; at neaps, the maximum draft is less than 2.1m.

8.28 Ye (15˚15'N., 97˚51'E.) (World Port Index No. 49670), a small river port, lies on high ground on the N bank of the river. The pagodas in the town can be seen for a considerable distance and are good landmarks.

A wooden pier abreast of the town is available only to small vessels.

The coast between Damatha Taung and White Point, about 9 miles to the S, rises to high land several miles inland, but closes the coast in the vicinity of White Point.

Pawdi Taung (14˚57'N., 97˚52'E.) rises to an elevation of 789m about 7 miles NE of White Point. Kinbun Taung, 774m high, lies 1.5 miles N of Pawdi Taung. Several other peaks in the vicinity make these two peaks difficult to identify.

The coast between White Point and the Dolphin's Nose, about 11 miles SSE, is bold and rocky. A mountain range, with

elevations of 305 to 634m, rises close inland along this stretch of coast.

Heinze Chaung

8.29 Heinze Chaung (14˚43'N., 97˚54'E.) is an estuary formed by the confluence of three large creeks which flow into the sea between high hills. The funnel-shaped estuary is about 4 miles long and 0.8 mile wide at its narrowest part.

The entrance to Heinze Chaung is encumbered by a bar which lies between South Sands and the outer part of North Sands. The outer part of the bar is fairly level, but farther in between the sands, there are a number of shoal patches which may reduce the depth in the channel to about 2.7m or less in spots. These patches are steep-to and marked by tide rips during maximum flood or ebb. Vessels with drafts to 7.6m can enter Heinze Chaung at HW springs and those with a draft of 5.5m at HWN.

Dolphin's Nose (14˚43'N., 97˚52'E.), the N entrance point of the estuary, rises to an elevation of 304.8m. Other hills on the same side of the estuary rise to heights of up to 451m.

Kandaung Promontory (14˚40'N., 97˚53'E.), an isolated hill 28m high, is the S entrance point of the estuary.

The shores of the estuary, with the exception of a few rocky points and some creeks, are fringed by mangroves. Kwethongyima, a jungle-covered low peninsula, lies between the mouths of the two creeks which flow into the estuary from the N. Fish Trap Point, on the S side of the estuary, lies S of and nearly opposite Kwethongyima. East Point, on the S side of the estuary at its narrowest part, lies about 3 miles NE of Kandaung Promontory.

Tides—Currents.—The currents in the approaches to Heinze Chaung turn from 2.5 to 3.5 hours after HW and LW at Mergui. In the offing, the flood tidal current sets N parallel with the coast and the ebb current sets in the opposite direction. At the entrance of the N channel, the currents also set parallel with the coast.

Outside South Sands, the tidal currents set across the bar and through the S channel until the sands are covered, when they set slightly across them at velocities estimated at 1.5 to 3 knots.

In the entrance of Heinze Chaung, the flood current commences about 14 hours after LW at Mergui and has a velocity of about 0.8 to 1.8 knots. The ebb current commences about 1.3 hours after HW at Mergui and has a velocity of 1 to 3 knots. Inside the entrance, the flood current commences about 0.8 hour after LW at Mergui and the ebb current commences at about the same time that it does in the entrance.

The observations upon which these statements are based were made during the dry season. During the rainy season, the ebb current will be considerably stronger, perhaps even to the point of overcoming the flood current.

Depths—Limitations.—Vessels drawing up to 7.6m can enter Heinze Chaung at HWS and vessels drawing up to 5.5m can enter at HWN. Local knowledge is required.

No attempt should be made to cross the entrance bar unless the channel has first been thoroughly examined and buoyed to mark it.

North Sands (14˚41'N., 97˚50'E.), with general depths of 3.7m and which dry in places, extend about 4.8 miles SSW from the coast between Dolphin's Nose and a position on the coast about 2 miles WNW.

Position Rock (14˚42'N., 97˚52'E.), which dries 4.3m and is awash at HWS, lies near the inner edge of North Sands about 0.5 mile SE of the Dolphin's Nose.

South Sands (14˚39'N., 97˚52'E.), with general depths of less than 3.7m and which dry in places, extend about 3.5 miles SSW from Kandaung Promontory.

The entrance bar lies between the outer part of North Sands and South Sands. The depths are fairly uniform on the outer part of the bar, but on the inner side of the bar the depths are shoal in places.

Shoal patches on the bar separate the entrance into N and S channels. In the past these channels had a least depth of 4m.

The S channel passes close along the edge of South Sands and of the two channels it has less LW to be crossed. Shoals along the channel are steep-to and are usually marked by tide rips.

Anchorage.—Anchorage can be taken outside the entrance W of North Sands, with the Dolphin's Nose bearing between 080˚ and 102˚, distant 3 miles. The depths in this position are about 8.2m.

Anchorage can be taken anywhere within the estuary after passing Kandaung Promontory, but the depths are more convenient and the currents are weaker on the S side.

Good anchorage can be taken within the estuary, in a depth of 12.8m, midway between Fish Trap Point and the S end of Kywethonyima Promontory.

The estuary is usually closed during the Southwest Monsoon to all shipping.

The coast between Heinze Chaung and Pazin Kyun, about 55 miles SSE, is backed by mountain ranges and fronted by the Moscos Islands.

Between Kandaung Promontory and the mouth of a creek, about 16 miles SSE, the coast is fronted by depths of 9.1m and less which lie from 1.5 to 7 miles offshore.

Caution.—Local knowledge is absolutely essential for passage; vessels should not attempt to cross the bar without thoroughly examining and buoying the channel which it is intended to take. During the Southwest Monsoon, the port is usually closed to shipping.

8.30 North Ledge (14˚31'N., 97˚49'E.), a 0.9m high rock with shoal depths extending about 0.5 mile NE from it, lies about 9.5 miles SSW of Kandaung Promontory.

Tapir Hill (14˚36'N., 97˚55'E.), a densely-wooded summit about 369m high, lies about 5.5 miles SSE of Kandaung Promontory. Middle Hill, 513m high and densely wooded, lies 24 miles ESE of Tapir Hill. Yetagun Taung, 905m high, lies about in the middle of another mountain range 7.5 miles SE of Middle Hill. Paungchon Taung, 1,167m high, marks the S end of this range about 5.5 miles S of Yetagun Taung. This latter peak appears blunt when viewed from the W, but appears sharp when viewed from the S.

Luce Hill, 706m high, and Sieve Hill, both densely wooded, lie close together about 17 miles SSE of the entrance of Heinze Chaung. False Peak, 445m high, lies about 2.8 miles S of Sieve Hill. Another densely-wooded hill, a high close to Fenton

Table of Contents

Point, lies about 4.5 miles S of False Peak. A pagoda stands close SE of Fenton Point.

Maungmagan Bay (14˚09'N., 98˚04'E.) lies between Fenton Point and Pagoda Point, about 134 miles to the SSE. Taungbadaung, a peak with a height of 482m, lies on the S part of a mountain ridge about 3.5 miles ENE of Pagoda Point.

An obstruction, with a least depth of 3.7m, lies about 5.8 miles NNW of Pagoda Point.

A rock, awash, lies almost 1.5 miles N of the same point.

Letkat Taung (13˚55'N., 98˚06'E.), 600m high with a pagoda on its summit, lies 10 miles S of Pagoda Point.

Pazin Kyun (13˚48'N., 98˚04'E.), 145m high, lies close offshore about 17 miles S of Pagoda Point. The island appears as part of the mainland when viewed from the W. The island has been reported to be a good radar target up to 23 miles.

The coast between Pazin Kyun and Tavoy Point, about 17 miles SSE, is bold and rocky.

Several mountain ranges, which are lower than those to the N, attain elevations of well over 305m along the S part of this section of coast.

8.31 **Nyawbyin Bay** (13˚40'N., 98˚08'E.), the largest of several bays which indent this coast, lies about midway between Pazin Kyun and Tavoy Point. Nyawbyin Point marks the S side of the entrance of the bay. A large fishing village lies close E of this latter point.

Kyanak Taung, about 3 miles S of Nyawbyin Taung, rises to a height of 390m.

Myinkwa Aw (13˚33'N., 98˚09'E.), entered between Than Maw and Tavoy Point, lies about 5 miles S of Nyawbyin Taung.

Hngetthaik Kyun (13˚32'N., 98˚08'E.), 159m high, lies about 0.5 mile S of Than Maw. The island is steep-to on its W side, but has depths of less than 9.1m extending from its E side. A depth of 7.9m, rocky bottom, lies about 0.2 mile S of Than Maw, otherwise the channel between Hngetthaik Kyun and the coast is deep and clear.

The Tavoy River and Approaches—Tavoy Entrance to Mergui Island

8.32 The Tavoy River, which is about 120 miles long, has it main source in the W slopes of the range that separates Burma from Thailand. Tavoy, a river port of some importance, lies on the left bank, about 39 miles N of Tavoy Point. The river traverses a broad plain about 3 miles above the town, and sandbanks and alluvial islands, which are constantly changing in form and position, impede the course of it. Many tidal creeks intersect the plain between the river and the foot of the hills on either side of it.

The hills extend N and S in parallel ranges on the W side of the estuary. Shinmaw Daung, 344.4m high, is located about 0.8 mile N of Tavoy Point on the small peninsula forming that point. Kyan-eik Taung, 390m high and densely wooded, lies about 3 miles NW of Shinmaw Daung. The hills, farther N, gradually recede from the W bank of the river. At a position about 16.5 miles N of Tavoy Point, the crest of the range, which is about 610m high, is located about 2.5 miles from the W bank. Abreast Tavoy, the range again closely approaches the river bank.

Low hills, with parallel ridges behind them, are found on the E side of the estuary. These ridges gradually rise to a height of 1,125m at Nanpayok Taung which is located about 19 miles E of Tavoy Point. Bok Taung, a steep summit, 670m high and conspicuous, is located about 9.5 miles northward of Bok Taung and is similar in appearance to that hill.

At Elbow Point, located on the E bank of the river, about 9.5 miles W of Tetchaung Taung, the river narrows considerably. Between Elbow Point and Shive Taung, a hill 243m high, about 7 miles NNE, the hills approach the E bank and at Shive Taung are within about 1.5 miles of it. This distance is maintained as far as Tavoy where they again recede from the banks and rise in successive ranges to Nwalabo Taung, 542m high and prominent, this peak is located about 14 miles ESE of Tavoy.

Between the mouth of the Tavoy River and Mergui Island, the best landmarks are Shittaunggyi Taung and Round Hill. The former, located 16 miles ESE of Tavoy Point, is 457m high. The latter is 198m high and lies about 10 miles SSE of Shittaunggyi Taung.

The coast between Round Hill and Kalwin Point forms the E side of the inner route to Mergui Harbor.

Mountain ranges with distinctive peaks back the coast for about 40 miles SSE of the entrance of the Tavoy River. Chimun Taung, 1,616m high, is located about 20 miles ENE of Round Hill and is the S peak of the highest range.

A 119m hill, located close within Zotzit Point, the S extremity of Zotzit Island, about 10.5 miles SSE of Round Hill, serves as a good mark. Seinnat Taung, 168m high and located about 6 miles SSE of Round Hill, is prominent. Durbar Peak, 661.4m high, is located about 9 miles NE of the same hill. Flat Hill, 193m high, and Barn Hill, 317m high, serve as useful marks. They are located 7.5 and 14 miles, respectively, SE of Zotzit Island.

Winds—Weather.—Tavoy receives weather information but no signals are displayed. For additional information on winds and weather, see paragraph 8.1.

Tides—Currents.—The mean range at Tavoy is 3.2m; the spring range is 4.7m. The tidal currents attain a rate of 3 to 4 knots during the dry season and up to 7 knots during the rainy season. During the latter season, the outgoing currents may run continuously. At Simbyubyin, springs rise 5.3m and neaps rise 3.7m.

Depths—Limitations.—The 40m curve lies about 11.5 miles W of Tavoy Point and up to 18.5 miles off the S end of Tavoy Island. A least depth of 10m is found in the fairway of the Inner Route, between Tavoy River and Mergui Harbor. The dangers off this coast, except for the outer islands of the Mergui Archipelago, lie within the 40m curve and are described with their related coastal features.

Caution.—Depths in the vicinity of Tavoy Point and in some of the river channels were reported to be less than charted.

The Tavoy River

8.33 The estuary of the Tavoy River is about 12 miles wide between Tavoy Point and an unnamed point about 7 miles W of **Nanpayok Taung** (13˚35'N., 98˚29'E.).

Return to paragraph: 8.34

The W bank extends in a general N direction for about 11 miles above Tavoy Point. The S part of this coast is bordered by several islands.

The Tavoy River Entrance

8.34 The E bank extends in a general NW direction for about 12.5 miles above the river entrance to Thamokmo, where above the river width is about 3 miles. The land on the E side is flat, open, and has many rice paddies. Several hills, with heights of 76 to 305m, lie along this stretch of coast. The higher mountain ranges inland have been previously described in paragraph 8.32. Three small rivers discharge into the Tavoy River between Thamokmo and a point about 3 miles to the SE.

Above Thamokomo, both banks extend in a general N direction for about 21 miles to Tavoy. Thamokmo is densely-covered with mangroves. Between Thamokmo and the village of Sinbyubyin, about 7.5 miles to the N, the E bank of the river is marked by paddy fields and clumps of trees.

Depths—Limitations.—The main channel passes close E of the islands off the S part of the W bank and then close off the W bank. North of Kathema Kyun, the E side of the channel is formed by a spit of sand and mud that extends about 5.5 miles S from Pyin-gyi and divides the river into two channels. Depths of less than 3.7m exist on the spit. The recommended channel passes W of the spit and then W of the island.

Depths of not less than 7.3m are found in the fairway of the entrance channel for a distance of about 10 miles above the entrance, except for charted depths of 6.4m and 6.1m, about 1.5 miles NNE and 1.3 miles NE, respectively, of the N end of Mibya Kyun. Depths of not less than 3.4m are found as far as Goodridge Plains, about 16.5 miles N of Tavoy Point. The river is shallow above Goodridge Plains and is navigable only by shallow-draft river craft.

Vessels up to 61m in length, with a draft of about 3.7m, can proceed to Simbyubin, about 14 miles below Tavoy, at HWN.

Caution.—Soundings in the Tavoy River between Mibya Kyun and Pyingyi-ashe differ from charted depths.

Hngetthaik Kyun, which lies about 2 miles W of Tavoy Point has been previously described in paragraph 8.31.

Puklaji, a rock awash at LW, lies about 2 miles NE of Tavoy Point.

8.35 **Mibya Kyun** (13˚36'N., 98˚12'E.), 143m high, lies about 4.3 miles NNE of Tavoy Point. Both sides of the island are fairly steep-to. A shoal, with a least depth of 1.2m in its central part, extends about 1 mile S from a position 0.2 mile SE from the SE end of the island. A shoal, with a least depth of 3.6m, extends about 0.5 mile SSW from the S end of the island.

Whale Rock (13˚36'N., 98˚13'E.), 0.9m high, lies about 0.3 mile NE of the SE part of Mibya Kyun.

Thin-bon Kyun (13˚38'N., 98˚11'E.), 221m high and densely wooded, lies about 0.8 mile NW of Mibya Kyun. Satlaik Kyun, a tree-covered islet, lies close E of the E extremity of Thin-bon Kyun. A narrow shoal, with a drying rock on its central part, extends about 3 miles SSW from Satlaik Kyun.

Kathema Kyun (13˚40'N., 98˚11'E.), 167m high and densely wooded, lies close offshore about 0.5 mile N of Thin-bon Kyun. A pagoda stands on a large boulder on the NE point of the island. A 4.3m patch lies about 0.8 mile N of the pagoda.

Mahratta Rock (13˚42'N., 98˚11'E.), a pinnacle with a least depth of 2.1m, lies about 2.3 miles NNW of the pagoda on Kathema Kyun. Two rocky patches, with depths of 3.7 and 5.5m, lie close together about 0.3 mile E of Mahratta Rock. Two similar patches, with depths of 3.7 and 4.3m, lie close together about 0.7 mile N of Mahratta Rock.

Pyingyi (13˚47'N., 98˚12'E.), a long, narrow island, lies in midchannel, about 2.5 miles NNE of Mahratta Rock. A conspicuous high tree lies on the E side of the island, about 2 miles from its N end.

8.36 **Chaukdaw Rock** (13˚46'N., 98˚11'E.), with a least depth of 3m, lies about 2.3 miles NW of the S end of Pyingyi.

Many alluvial islands, which are connected by shoals, lie in the river between Pyingyi and Tavoy.

Nauwi Rocks, 1.2m high, lie about 10.8 miles ESE of Tavoy Point. A rock, awash at LW, lies about 1 mile SSW of these rocks and two detached rocks, awash at HW, lie about 1.5 miles SSE of the same rocks.

An extensive shore bank, with depths of less than 5.5m, fronts this entire shore and extends up to 7 miles offshore to a position about 6.5 miles WNW of Nauwi Rocks.

A detached 3.7m patch lies close off this shore bank, about 4.8 miles ENE of Tavoy Point.

Anchorage.—Anchorage can be taken, in a depth of 7.3m, about 1 mile N of Puklaji.

Deep-draft vessels can anchor, in depths of 9.1 to 10.4m, about 0.8 mile E of Mibya Kyun Light. Vessels with similar drafts can also anchor, in depths of 9.4 to 11.6m, about 0.5 mile NE of Saitlaik Kyun. Anchorage can be taken, in depths of 9.8 to 12.2m, about 0.5 mile E or 0.8 mile NNE of Kathema Kyun. A mooring buoy, used by lighters, is anchored about 0.5 mile N of the same island.

Light-draft vessels with local knowledge can anchor, in 5.8m, from 1.3 to 1.5 miles SSW of the S end of Pyingyi. Similar vessels with local knowledge can anchor, in 4m, off Goodridge Plains with a waterfall bearing 270˚, distant about 1.5 miles.

Directions.—A vessel may approach the Tavoy River in a 345˚ direction, from a position 5.5 miles, bearing 121˚ from the pagoda on Tavoy Point, which leads towards the anchorages off Mibya Kyun, Satlaik Kyun, and Kathema Kyun. If proceeding to the anchorage about 0.8 mile NNE of Kathema Kyun, from a position about 0.5 mile E of Mibya Kyun Light, a course of about 350˚ should be steered, which leads to the anchorage. If proceeding to the anchorages upriver, when N of the 4.3m patch about 0.8 mile N of Kathema Kyun, course should be altered to the W to bring the NE point of Kathema Kyun in line bearing 173˚ astern with the W edge of Satlaik Kyun. This stern range leads in the fairway to the anchorage SSW of the S end of Pyingyi, passing between Mahratta Rock and the 3.7m shoal which lies about 0.3 mile E of it, but it leads very close E of the 3.7m patch located about 0.8 mile N of Mahratta Rock.

8.37 **Tavoy** (14˚04'N., 98˚11'E.) (World Port Index No. 49680) lies on the E bank of the Tavoy River, about 35 miles

Table of Contents

above the entrance. An extensive export trade is maintained with Rangoon, Penang, and Thailand.

There are a number of jetties, pontoon piers, and finger piers suitable only for small light-draft craft. Almost all of the vessels calling at the port are coastal craft and all but the smallest of these anchor near the mouth of the river and work cargo to and from lighters. An ample number of small lighters, launches, and native craft are available for this purpose.

Mergui Harbor and Approaches—North End of the Bentinck Route

8.38 **Kantu Rocks** (13˚20'N., 98˚24'E.), two small isolated rocks, lie about 5.5 miles WNW of Round Hill. The outer rock lies about 4 miles offshore. A shoal extends about 0.5 mile S from these rocks.

The W side of the channel leading to Mergui Harbor from the N is formed by Tavoy Island and the islands to the S of it. The E side of the channel is formed by flats and banks fronting the mainland from abreast of Round Hill to Mergui Island. Middle Passage and Iron Passage lead into the Inner Route from the W.

The S approach to Mergui Harbor is made through an 18-mile long channel, the SW extremity of which connects with the Bentinck Route.

Mergui Harbor has some commercial importance. Other ports and harbors are available which provide sheltered anchorage and which can be reached through deep channels.

Winds—Weather.—Mergui receives weather information but no signals are displayed. For additional information refer to the winds and weather described in paragraph 8.1.

Tides—Currents.—The tide may fall 0.3m lower than the datum to which the soundings on the chart are reduced in the perigee spring tides of February and March.

During the rising tide the tidal currents set S off the E coast of Tavoy Island through Port Owen at rates of 1 to 2 knots at springs in the dry season, but may attain a strength of 4 knots during the rainy season. During the falling tide these currents set N at rates of 2 to 3 knots at springs during the dry season. During the rainy season, the rates are weaker and at neaps, the set may be to the S.

The tidal currents set through the channel between the N part of Tavoy Island and the extensive flat that extends W from the adjacent mainland at a rate of 1.5 knots at springs. The tidal currents on the rising tide set towards this flat.

Strong eddies, tide rips, overfalls and tidal currents occur in Middle and Iron Passages, especially during the Southwest Monsoon. In both passages, the tidal currents appear to set E on the rising and W on the falling tide. The tidal currents attain a rate of more than 3 knots at springs in Iron Passage.

Between **Pinbwa Island** (12˚17'N., 98˚20'E.) and Christmas Island, about 20 miles SW, in the SW approach to Mergui Harbor, the tidal currents set SE on the rising tide. In the vicinity of **Shrub Rocks** (12˚15'N., 98˚21'E.), these currents set E on the rising tide and are strong at springs.

In Fell Passage, E of King Island, the tidal currents on the rising tide enter at both ends, meeting abreast of Yemyok. The tidal currents set NE in the narrows N of Payi Kyun from 6 hours after to 1 hour before HW at Mergui at a rate of 1.25 knots at springs. The tidal currents in the S approach to Fell Passage are described with the Bentinck Route in paragraph 8.61.

Depths—Limitations.—There is a least depth of 10m over a width of 2.8 miles in the fairway of the navigable channel between the N part of Tavoy Island and the extensive flat which extends W from the adjacent mainland. Soundings give no warning of the approach to this flat.

Middle Passage and Iron Passage are deep and clear of dangers.

The approach channel to Mergui from the S is shallow. Vessels with a draft not exceeding 2.4m and having local knowledge can use this channel at HW.

The dangers off this coast, except for the outer islands of the Mergui Archipelago, lie within the 40m curve.

Aspect.—Vessels approaching from the N and using the Inner Route should shape course to pass about 2 miles E of the N extremity of Tavoy Island and then alter course to pass about the same distance off Cornwall Point, the E extremity of that island. A direct track, which is free from dangers, then leads between Iron Island and Long Island.

Vessels approaching from the W should proceed through either Middle Passage or Iron Passage. Care is necessary in both passages because of the strong tidal currents and tide rips usually encountered.

Iron Island, King Island, and Plantain Island appear as one lofty island to vessels approaching from the N. From a position about midway between Iron Island and Long Island, a vessel should steer 167˚ for the steep E extremity of Plantain Island. When Thita Kyun bears 113˚, course should be altered to 150˚ with the summit of Pataw Island ahead. When the NE end of Plantain comes in line bearing 312˚ with the summit of Little Cannister Island, it should be brought astern and kept on that bearing until the old light structure off Kalwin Point can be identified. At such time the light structure should be brought in line bearing 130˚ with Pawdawmu Pagoda. This course of 130˚ leads to the outer anchorage NW of Kalwin Point.

The approach from the S is suitable only for light-draft vessels with local knowledge.

North Approach to Mergui Harbor—West Side

8.39 **Tavoy Island** (13˚13'N., 98˚15'E.), narrow and mountainous, lies with its N end about 10.8 miles SW of Kantu Rocks. Its W side is steep and rises to an elevation of 687m about 7 miles S of its N end. Its E side is low and terminates in Cornwall Point. A small white pagoda, not visible from the N, stands on the E side of the island about 2 miles N of its S end.

Port Owen (13˚06'N., 98˚19'E.) lies on the E side of Tavoy Island about 7.5 miles SSE of its N extremity. Edward Island, William Island, Rich Island, and Campbell Island lie on the N side of the port and the peninsula terminating to the E in Cornwall Point forms its S side. North Button Island, Rat Island, and Mouse Island lie within 0.5 mile N of the N end of the above group of islands.

A few small villages lie in the vicinity of Port Owen. The principal village stands at the head of Fisher Bay on the S side of Port Owen.

Anchorage.—Anchorage can be taken in Port Owen, in depths of 12.8 to 23.8m, but the holding ground is not good. During the Southwest Monsoon, sudden squalls may sweep

down from the mountains. There is a least depth of 11m in the approach to the anchorage and depths of 5.5 to 9.1m in the S approach between Cambell Island and the N side of the peninsula forming the S side of the port. An obstruction, with a least depth of 7.3m, lies about 0.8 mile SW of the SE end of Campbell Island.

South Island (12˚54'N., 98˚19'E.), densely wooded and 153m high, is separated from the S end of Tavoy Island by a narrow unnavigable channel.

South Rocks (12˚50'N., 98˚19'E.), a chain of rocky islets, extend about 2 miles SSE from a position 0.5 mile S of South Island.

Kyun Taung Island, Cochin Island, and South Button Island lie between 8 and 3 miles N of the S end of Tavoy Island.

Iron Island (12˚45'N., 98˚20'E.), 365m high in its S part, lies about 2.5 miles SSE of the S end of South Rocks. The W side of the island is precipitous. Middle Passage separates Iron Island from South Rocks; Iron Passage separates Iron Island from Kadan Kyun to the S.

Anchorage.—Anchorage can be taken, in a depth of 22m, sand and mud, off the E side of Iron Island.

8.40 Kadan Kyun (12˚40'N., 98˚21'E.) is large and densely wooded. Its NE side forms the W side of the inner route.

Lys Shoal (12˚39'N., 98˚25'E.), which consists of two rocky patches, lies about 5 miles SE of the S end of Iron Island. The NW patch has a least depth of 3m and the SE patch a least depth of 3.7m. The SW extremity of Iron Island bearing 308˚ and in line with the SW extremity of Little Canister Island leads close NE of Lys Shoal. The N entrance of Padaw Aw bearing 248˚ leads S of the shoal.

Kadan Kyun Sound (12˚37'N., 98˚26'E.) is entered between a point about 1 mile SW of Lys Shoal and the N end of Plantain Island, about 2.5 miles ESE. The latter island appears to be a peninsula. A 406m high peak rises just within the N end of the island. Panella Island, low and small, lies 0.4 mile NW of the N end of Plantain Island. A shoal, with a depth of 8.7m, lies about 0.8 mile NE of Plantain Island.

Kadan Kyun Sound is almost entirely filled by shoals and drying flats except near its entrance. Anchorage can be taken, in a depth of 12.8m, with the W entrance point of the sound bearing 341˚, distant 0.5 mile. Caution is necessary because this anchorage lies only about 0.2 mile from the edge of a 3.7m shoal.

North Approach to Mergui Harbor—East Side

8.41 The coast between Round Hill and Zatzit Point, about 10.5 miles SSE, is fronted by extensive sand and mud flats. Shoal ground, as defined by the 9.1m curve, extends up to 9.5 miles offshore. Zatzit Flat, which dries in places, extends 7 miles W from Zatzit Point.

Kyunhla Taung (13˚02'N., 98˚28'E.), a conical island 165m high, lies about 6.8 miles SW of Zatzit Point.

Kumla Patch (12˚58'N., 98˚28'E.), with a least depth of 4.9m, lies about 3.8 miles SSW of Kyunhla Taung.

Anyinpo Island, 142m high, lies about 11 miles S of Zatzit Point and Anyinma Island, 107m high, lies about 1.5 miles farther S. Both islands are densely wooded. Reefs and shoal ground lie between these islands and the coast.

Mandrell Reef (12˚57'N., 98˚32'E.), a low isolated islet, lies about 1 mile NNW of Anyinpo Island.

A beacon marks a drying reef about 1.5 miles SW of Anyinma Island.

Galbraith Rock (12˚50'N., 98˚34'E.), which dries 2.7m and is surrounded by shoal depths, lies about 4 miles S of Anyinma Island.

Gladys Island (12˚49'N., 98˚36'E.), 103m high, lies about 2.3 miles ESE of Galbraith Rock.

Long Island (12˚48'N., 98˚31'E.), 134m high, lies about 6.8 miles SSW of Anyinma Island and is the outermost island of a group which lie within the limits of a shoal which extends about 7.3 miles NW from the coast.

The other islands of the group consist of Daisy Rocks, Cone Island, and Two Spade Island.

Kadwe Rock, a detached rock 1.2m high, lies 2.8 miles S of Long Island.

Pyinban Rocks (12˚44'N., 98˚34'E.) consists of a chain of rocks which lies about 2.5 miles E of Kadwe Rock. The furthest S, Peak Island, rises to a height of 36m. A rock awash lies about 0.2 mile S of Peak Island.

White Rocks (12˚41'N., 98˚34'E.), 4.3m high, lie about 1.8 miles S of Peak Island. A drying rock lies 0.5 mile SW and a similar rock lies 1 mile SSE of White Rocks.

High Rock, 11.3m high, lies about 3.8 miles SE of White Rocks. Cap Rock, 6.7m high, lies 4.5 miles SSW of White Rocks. Thitya Kyun, a steep-to square rock 26m high, lies 1.3 miles SE of Cap Rock. These three islets or rocks lie on an extensive shoal, as defined by the 10m curve, which extends about 13 miles NW from a position about 0.8 mile N of **Kalwin Point** (12˚29'N., 98˚36'E.).

Mergui Harbor—West Appoach

8.42 Islands west of the south end of Tavoy Island.—Pinnacle Rock (12˚59'N., 98˚14'E.), West Rock, and Mali Kaing are a group of high, steep-to black rocks lying about 3 miles W of the S part of Tavoy Island.

Paine Kyun (12˚55'N., 98˚11'E.), densely wooded and 370m high, lies about 6.5 miles W of the S end of Tavoy Island. Sinthama Kyun, conical, densely wooded and 311m high, lies about 5.5 miles SSE of Paine Kyun.

Birds Nest Islands (12˚53'N., 98˚15'E.), a group of three gray, rocky islets, lie about 3.3 miles WSW of the S end of Tavoy Island. Mali Don, the largest of the group, rises to an elevation of 103m.

The channels between these island groups are clear of all known dangers.

8.43 Outer islands.—Kabosa Island (12˚48'N., 97˚51'E.), the N outer island of the Mergui Archipelago, lies about 26 miles W of the N end of Iron Island. The densely-wooded island has four summits arranged in the form of a square. The two S summits rise to elevations of about 396m. A rock lies about 183m off the SW end of the island.

West Canister Islet (12˚41'N., 97˚43'E.), 144m high, steep, and covered with jungle growth, lies about 8.3 miles SW of Kabosa Island. North Pinnacle and South Pinnacle, two low

rocks, lie on a detached rocky patch about 4.5 miles E of the above islet.

Freak Islet (12˚41'N., 97˚53'E.), conical in shape and 37m high, lies about 4.8 miles ESE of North Pinnacle. A few scattered trees lie on this islet.

Investigator Passage (12˚45'N., 97˚48'E.), deep and clear, lies between the above three islands to the S and Kabosa Island to the N.

Tenasserim Island (12˚34'N., 97˚51'E.) lies about 10.5 miles S of Kabosa Island. Tenassarim Peak, 494m high, is the highest and furthest S of several peaks which, from a distance, appear as separate islands. Herbert Island and Howard Island, both high, lie close N of Tenasserim Island. West Islet, 106m high, lies close off the SW side of the same island and appears to be a part of that island. East Islet, 82m high and not easily distinguished, lies close S of the E end of the same island. All of the above islands are densely wooded and steep-to.

Rock Islet (12˚35'N., 97˚54'E.), 20m high and white in appearance from the E, lies about 1 mile NE of the E end of Tenasserim Island.

Anchorage can be taken, in a depth of 16.5m, near the head of an inlet which lies about in the middle of the NW side of Tenasserim Island. Protection is provided during the Northeast Monsoon.

The outer islands of the Mergui Archipelago, S of Tenasserim Island, are somewhat similar in appearance. All are high, steep, and usually densely covered.

8.44 Saurin Island (12˚30'N., 97˚48'E.), 178m high, lies about 5 miles SW of Tenasserim Peak. Two small islets, Ramsey and Morgan, lie 2.5 miles ESE and 4.5 miles E of Saurin Island. A breaking rock awash lies about 0.5 mile SSW of Morgan Islet.

The channel between these islands and Tenasserim Island is deep. The currents are irregular and tide rips occur.

Blundell Island (12˚27'N., 97˚50'E.), 284m high, lies about 4.5 miles SSW of Tenasserim Island. Chevalier, a small high islet, lies about 1.5 miles W of the S point of Blundell Island. Chevalier Rock, small and low, lies about 0.3 mile S of Chevalier Islet.

Lion Rock (12˚24'N., 97˚49'E.), 40m high and sparsely covered with scrub, lies about 1.8 miles S of Blundell Island.

Sir Charles Metcalfe Island (12˚17'N., 97˚47'E.), about 411m high, lies 6 miles S of Lion Rock.

Mermaid Passage (12˚22'N., 97˚51'E.), entered from the SW between Lion Rock and Sir Charles Metcalfe Island, is deep and clear of known dangers.

Smart Island (12˚17'N., 97˚52'E.), about 268m high, has rocky shores and lies 3 miles E of Sir Charles Metcalfe Island. Numerous rocks lie off the points which form open bays.

Saddle Island (12˚24'N., 97˚55'E.), 77m high, lies 5.5 miles ESE of the S end of Blundell Island. A reef extends about 183m from its SW point.

Oubliee Rock (12˚26'N., 97˚58'E.), 16m high, lies 8 miles E of the S end of Blundell Island. A rock, which dries 3.7m, lies about 0.6 mile E of this rock.

South Direction Island (12˚29'N., 98˚00'E.), 95m high, lies about 10 miles E of the N end of Blundell Island. Two rocks lie about 0.3 mile off its SW side. North Direction Island, 46m high at its S end, lies 14 miles NNW of South Direction Island. A deep channel separates these two islands.

8.45 Elphinstone Island (12˚20'N., 98˚00'E.), irregular in shape, hilly, and densely wooded, lies with its NW end about 8 miles ESE of the S end of Blundell Island. The most prominent summits are Elphinstone Peak, 533m high, and False Peak, 430m high. Both peaks lie on the W part of the island. Elphinstone Peak appears as a separate conical island when viewed from the N.

A large bay indents the W side of the island. The bay head extends in a NE direction almost to the foot of Elphinstone Peak, and in a E direction almost to the foot of False Peak. During the Northeast Monsoon, vessels with local knowledge can anchor in convenient depths, sand, near the head of the bay.

Port Maria (12˚23'N., 98˚03'E.) lies within the limits of an open bay that indents the N side of Elphinstone Island. The bay is sheltered except from the N and NE.

The W side of the bay is irregular and broken, with many islets close off that side. The steep-to E side of the bay is bordered by hills which slope down to the high-water line.

Castle Island, topped by three peaks, lies on the W side of the N approach to the bay about 0.8 mile NNW of the W entrance point. The highest peak rises to a height of 52m. Sack Island, 137m high, lies 0.5 mile SW of Castle Island. Two islets lie about 0.3 S of Sack Island. All of these islets and islands appear to be a part of Elphinstone Island when viewed from the N.

Entrance Islet (12˚28'N., 98˚03'E.), 66m high, lies about 2 miles NE of Castle Island and about in the middle of the N approach to the bay. A fringing reef extends from the E and S side of the islet. The E part of this reef just covers at HW.

Burne Island (12˚27'N., 98˚05'E.), 112m high and narrow, lies 1.8 miles ESE of Entrance Islet. Three small islets lie off the SE point of the island.

Tidal currents in the vicinity of Port Maria are weak. Cross currents are sometimes encountered in the N approach to the port

Anchorage.—When Crab Islet, about 1.8 miles S of the W entrance point, is in line bearing 261˚ with Elphinstone Peak, anchorage can be taken, in a depth of 12.8m. This position is exposed to N and NE winds.

Directions.—Vessels approaching Port Maria can pass on either side of Entrance Islet and then steer directly into the bay, favoring the E side until a bay at its W end opens.

Islands and Dangers Between Elphinstone Island and Iron Passage and Middle Passage

8.46 Bowers Island (12˚30'N., 98˚06'E.), small, steep, and 74.7m high, lies about 4 miles NE of Entrance Island.

Corbin Island (12˚29'N., 98˚09'E.), irregularly shaped and 136m high, lies about 2.5 miles SE of Bowers Island. This densely-wooded island is the furthest N of a group of islands and rocks lying E of Elphinstone Island and in the NW approach to the Bentinck Route.

Hayes Island (12˚29'N., 98˚11'E.), 91m high and densely wooded, lies about 1 mile E of Corbin Island. A sunken rock lies about 1 mile NNE of Hayes Island. The channel between Hayes Island and Corbin Island is deep.

Maingy Island (12˚31'N., 98˚15'E.), separated from the W side of King Island by a narrow, shallow channel, is high and steep-to on its W side. A peak, 600m high, rises in its SW part. Its SE side is fronted by an extensive flat which dries 1.5m. A small, high islet lies close E of the N end of Maingy Island.

Page Islet (12˚36'N., 98˚10'E.), 26m high, lies 5 miles NW of Maingy Island. This conical-shaped islet is covered with straggly trees.

The **Marcus Islands** (12˚39'N., 98˚12'E.) consist of a group of four islands which lie close together about 6 miles WSW of the N end of King Island. Marcus Island, 140m high, is the N island of the group. Gifford Island, 134m high, is fringed by a reef which extends about 0.3 mile SW from it; a part of this reef is 3.7m high. Harris Island, 140m high, appears as two islands joined by a narrow, sandy strip. Genn Island, the smallest and E, is 69m high. Strong currents and tide rips are encountered in the deep channels between these islands.

Brown Rock (12˚41'N., 98˚11'E.), 20.1m high, lies about 2.5 miles NW of Marcus Island. Rocks, which dry at times, lie close N and S of it.

Middle Passage (12˚49'N., 98˚20'E.), a deep, clear passage about 2 miles wide, lies between the N end of Iron Island and South Rocks.

Iron Passage (12˚42'N., 98˚22'E.), deep and clear of dangers in the fairway, lies between Iron Island to the N and King Island to the S.

8.47 **Ant Islet** (12˚42'N., 98˚19'E.), 16m high and scrub covered, lies on the S side of Iron Passage, about 1 mile N of the N end of King Island. Mussel Islet, 8.2m high, lies about 0.3 mile S of Ant Islet. Melhuish Island, 68m high and densely wooded, lies about the same distance NE of the N point of King Island. Three wooded islets lie close off the W shore of an open bight that forms the N side of King Island.

Directions.—Middle Passage and Iron Passage lead into the Inner Route to Mergui Harbor.

Vessels proceeding E through Iron Passage should favor the N side of the passage to minimize the effects of the strong eddies and tide rips off Ant Islet and Mussel Islet. The set of the flood current onto Iron Island must be guarded against.

Mergui Harbor—North Approach

8.48 The channel leading to Mergui Harbor is about 2.8 miles wide between the NE side of Plantain Island and Cap Rock, about 5 miles ENE. The E side of the channel is formed by an extensive shoal, as defined by the 10m curve, which extends about 13 miles NW from a position about 0.8 mile N of **Kalwin Point** (12˚29'N., 98˚36'E.).

Kala Kyun (12˚30'N., 98˚30'E.), which is hilly on its W side and fronted by mangroves, is separated from King Island by Fell Passage.

Sa Kyun, 89m high and steep, lies on the W side of the N entrance of Fell Passage, about 2.3 miles NNW of the N end of Kala Kyun.

Kaw Mwe, 61m high and topped by a pagoda, is connected to Kala Kyun by a drying flat. A rocky shoal, as defined by the 6m curve, extends about 2.5 miles N from the N side of Kala Kyun and forms the E side of the N entrance of Fell Passage.

A narrow channel, with depths of 6.1 to 27.4m, extends about 6.5 miles S from Kaw Mwe along the E side of Kala Kyun. South of a line drawn between Kaw Mwe and Kalwin Point to the SE, with the exception of the narrow channel referred to above, the entire area is marked by numerous small islands, shoals, and drying flats.

Pataw Island (12˚27'N., 98˚35'E.), which lies in the SE corner of this shoal area, is divided into two parts by a large mangrove swamp. The S part is known as Pahtet Island. Pataw Taung, rises to a height of 238m near the N end of the island, and Pati Taung, 83m high, lies near its S end. Numerous pagodas lie on various parts of the island.

Kalwin Point (12˚29'N., 98˚36'E.), the NW extremity of Mergui Island, forms the S entrance point of the Kiaupi River. This river separates the island from the mainland and forms one of the outlets of the Tenasserim River.

Mergui Harbor

8.49 Mergui Harbor lies at the S end of the channel that separates Pataw Island and Pahtet Island from Mergui Island. The town of Mergui lies on the W coast of Mergui Island abreast the S part of Pahtet Island.

Tides—Currents.—The tidal range at springs is about 51m; the mean range is about 3.4m.

The tidal currents set S through the harbor on the flood and N on the ebb. At springs, the rate of the tidal currents at half-tide is about 2 knots during the dry season. During the rainy season, the rate of the ebb is probably greater.

Depths—Limitations.—Depths of 10 to 11m are found at the outer anchorage.

Depths of 2.7 to 3m are found in the fairway of the channel from the entrance, about 137m W of Kalwin Point Light to a position about 1 mile S of the entrance. From the latter position, depths of 3 to 4m are found in the fairway to a position about 0.3 mile NNW of the Main Wharf.

Depths of 5.8 to 9.8m are found in the inner anchorages NW and W of the Main Wharf.

A narrow shoal, with depths of 1.2m or less, lies close W of the channel about 0.3 mile within the entrance.

An obstruction, with a least depth of 2.7m, lies on the SW side of the entrance channel, about 0.3 mile NW of the same light structure.

A 1.8m patch lies close E of the fairway about 0.9 mile N of the Main Wharf.

The E sides of Pataw Island and Pahtet Island are fringed by rocks, with the 5.5m curve lying up to 0.2 mile offshore. Drying flats extend up to 0.2 mile off the W side of Mergui Island.

Aspect.—Mergui Pagoda, gilded and prominent, stands in the city at an elevation of 73m and is brilliantly illuminated at night. Pawdawmu Pagoda stands at an elevation of 57m, about 2 miles NE of Mergui Pagoda. Some conspicuous oil tanks stand about 2 miles S of Kalwin Point.

Anchorage.—Anchorage can be taken in Mergui Outer Harbor, in depths of 10 to 11m, between 1 and 1.7 miles NW of Kalwin Point Light, with Pataw Pagoda bearing between 168˚ and 181˚.

Vessels with local knowledge and drawing more than 5.5m can anchor about 0.2 mile W and 0.3 mile NW of the head of

Table of Contents

Main Wharf. The swinging room is restricted by the extending shoals.

Vessels of greater draft can anchor in The Pool, a small deep area of the E end of Pahtet Island. The swinging room is restricted and the eddies and currents are strong. Local knowledge is required.

Directions.—Vessels should only enter Mergui Harbor during the daytime and under favorable conditions. Navigational aids are inadequate and pilotage is not available.

Vessels drawing up to 3m, and not possessing local knowledge, should not attempt to enter until after the first quarter of the flood; those of greater draft should not enter until after the first half of the same tide. Vessels with local knowledge and having a draft of 4.6m can enter after the first quarter of the flood at neaps.

Vessels entering Mergui Harbor should steer with Kalwin Point red light structure, in line bearing 130˚ with Pawdawmu Pagoda, until the lighted beacon on the seawall at Mergui is in line bearing 169.5˚ with Mergui Pagoda. A course of 169.5˚ should then be steered until the white pagoda on the SE side of Pawtaw Island bears about 258˚. Course should then be altered slightly to the E for about 0.2 mile to avoid the 1.2m patch, located close W of the range lines. Having cleared this patch, vessels should steer for the pagoda, lying about 0.2 mile ENE of Pawhtet Pagoda, on a course of 197˚ and anchor as convenient.

Care should be taken to clear the wreck, with a depth of 1.2m, which lies close N of the 130˚ course line.

8.50 **Mergui** (12˚28'N., 98˚36'E.) (World Port Index No. 49690), the most important town in the southern district of Burma, extends for more than 1 mile along the SW shore of Mergui Island. It is a scheduled port of call for small coastal vessels and is the center of important rubber and tin mining operations.

Main Wharf, a wooden structure on piles with depths of 0.6 or 0.9m alongside, lies at the S end of the seawall which fronts the town. Naukle Jetty extends from the shore S of Main Wharf and was reported to have a depth of 1.5m alongside.

A pontoon wharf, 73.2m long and 6.1m wide, with a reported depth of 4.3m alongside, is situated abreast of the town. Ocean-going vessels normally work cargo into lighters at the anchorages.

Mergui Harbor—South Approach

8.51 Mergui Harbor can be approached from the SW by way of a channel 18 miles long, which leads between islands and mud banks that extend SW from Mergui Island. The seaward end of the channel connects with the Bentinck Route in the vicinity of **Shrub Rocks** (12˚15'N., 98˚21'E.). This channel, which can only be used by light-draft vessels with local knowledge, saves about 15 miles in distance.

Depths—Limitations.—The entrance of the approach channel leads between **Tatagyi Island** (12˚17'N., 98˚23'E.), which lies about 2 miles E of the S end of King Island, and North Round Island, about 0.5 mile S of Tatagyi Island. The entrance lies about 3 miles ENE of the N end of the Bentinck Route.

There are considerable depths in the approaches and within the entrance, but from there to Limlor Anchorage, about 6.5 miles NE of North Round Island, the depths in the fairway range from 6.4 to 9.1m. Only small vessels with local knowledge and drawing not more than 2.4m at HW can proceed from Limlor Anchorage to Mergui.

Aspect.—Tatagyi Island is generally low but has some hills on its W, E, and SE sides. The W hill is the highest.

Shrub Rocks, 7m high, lie about 1.8 miles WSW of the S end of Tatagyi Island. A reef extends almost 1 mile NW from the rocks.

North Round Island (12˚15'N., 98˚23'E.), 74m high, lies 0.5 mile S of Tatagyi Island. South Round Island, 41m high, lies about 0.3 mile farther S. A shoal, with a least depth of 4.9m, lies 1 mile NE of North Round Island.

The **Mergui Islands** (12˚10'N., 98˚25'E.) are bold, densely wooded, and lofty. The higher summit of the S island rises to an elevation of 382m and is pyramidal in shape. Shelving mud banks extend 1.5 miles W from the N island and about 2 miles W from the S island.

8.52 **Saunggyi Kyun** (12˚07'N., 98˚24'E.), about 1 mile S of the S island of the Mergui Islands, rises to an elevation of 158m. Shoal ground, as defined by the 10m curve, extends about 3.3 miles WSW from the W side of Saunggyi Kyun.

Irregular depths lie between South Round Island and the N island of the Mergui Isands. A 5.5m patch lies about 0.6 mile SE and a rock, which dries 2.7m, lies about 14 miles ENE of South Round Island.

Thetyagi Island (12˚16'N., 98˚26'E.), small in extent, lies on the S end of a drying shoal on the SE side of the approach channel about 2.8 miles ENE of North Round Island.

Pyin Island (12˚19'N., 98˚26'E.), 89m high, lies on a mud flat about 1.8 miles NE of Tatagyi Island. Bertie Island, low, covered with mangroves, and marked by a wooded hill near its SE point, lies about 1 mile NE of Pyin Island. The mud flat, on which the island lies, extends about 1.3 miles E from Bertie Island.

Limlor Island, 62m high, lies about 0.5 mile S of Bertie Island.

Anchorage.—Anchorage can be taken, in depths of 12.8 to 14.6m, about 0.2 mile SE of Limlor Island.

Directions.—From a position on the Bentinck Route, with the S point of **Cantor Island** (12˚13'N., 98˚15'E.) bearing 316˚, distant 1.8 miles, vessels using the S approach to Mergui Harbor should steer about 049˚, with the S end of Tatagyi Island a little on the starboard bow. When Shrub Rock bears about 041˚, distant 1.3 miles, course should be altered to 066˚ in order to pass midway between Tatagyi Island and North Round Island. Allowance should be made for the strong spring tidal currents. After passing the S end of Tatagyi Island, course should be altered to about 042˚ for 3.5 miles until the E end of Pyin Island bears about 012˚. Course should then be altered to 068˚ for the anchorage S of Limlor Island.

Caution.—Only light-draft craft with local knowledge can proceed NE of this anchorage.

The coast between Mergui Harbor and Auckland Bay, about 20 miles SSW, is low and swampy. Several shallow rivers, navigable only by boats, flow out through narrow channels bordered by flats. Large trees usually cover the ridges and hummocks.

Auckland Bay (12˚07'N., 98˚32'E.), which has not been closely examined, is entered between Sellore Island and Pyingi Island, about 10 miles to the NE. Sheltered anchorage, in depths of 7.3 to 22m, can be taken in the outer part of the bay, over a mud bottom. Caution is required.

Fell Passage

8.53 **Fell Passage** (12˚18'N., 98˚21'E.), which extends S along the E coast of King Island, is used by coastal vessels proceeding through the Mergui Archipelago. The narrow passage is about 19 miles long. Passage is not difficult on the flood tide, but local knowledge is necessary.

The passage has a depth of 7.9m in the N entrance. A least depth of 6.1m can be carried up to 7 miles S of the N entrance, but up to 5 miles farther SSW there is a least depth of 4.3m in the channel.

Considerable depths are found in the S entrance and up to 5.5 miles NE of this entrance.

The N entrance of Fell Passage, which has a channel width of about 0.3 mile, is entered between **Sa Kyun** (12˚33'N., 98˚29'E.) and the rocky shoal which extends 2.5 miles N from Kala Kyun.

Yemyok Island (12˚26'N., 98˚27'E.) lies on a drying flat in the middle of the passage about 6.5 miles SSW of Sa Kyun. The preferred channel passes W of this island.

Bare Island (12˚25'N., 98˚26'E.), 45m high with a rounded, wooded summit, lies on the W side of the channel about 0.5 mile SW of Yemyok Island.

Payi Kyun (12˚22'N., 98˚26'E.), 82m high on its SE side, lies in mid-channel about 2 miles SSW of Yemyok Island. A pagoda lies on the NW side of the island. A drying mud flat extends about 1.3 miles NNE of the island and a drying sand flat extends the same distance SW from it. Sakone Island lies close off the E side of Payi Kyun.

Pigale Islet, 33m high, lies about 0.2 mile NW of the previously-mentioned pagoda. A beacon, 3.7m high and topped by a black and white ball, marks the SE end of the rocky shoal extending E from Pigale Islet.

The **Myini Islets** (12˚24'N., 98˚26'E.), a group of small islets, lie on the W side of the channel about 0.5 mile N of Pigale Islet.

A shoal, with a least depth of 2.7m, lies in the channel about 0.3 mile E of the N end of **Thanpo Islet** (12˚23'N., 98˚25'E.).

8.54 **Gyun Thaung** (12˚20'N., 98˚24'E.), about 52m high, lies on a drying bank on the SE side of the channel, 2 miles SW of the SW point of Payi Kyun. The two islands are joined by a narrow, shallow ridge. A 4.9m shoal lies in the fairway about 0.5 mile SW of the NW end of Gyun Thaung.

The S entrance of Fell Passage lies between the S end of King Island and Tatagyi Island, Fell Island, and Passage Island to the S.

Tatagyi Island has been previously described in paragraph 8.51. Tatange Island, 243m high, lies about 0.5 mile W of the N part of Tatagyi Island.

The Lahchi Islands, five small conical islets, lie between 0.3 and 1.3 miles SW of Tatange Island.

Passage Island (12˚17'N., 98˚21'E.), about 1.3 miles SW of Tatange Island, forms the S entrance point of Fell Passage. The 113m high summit is almost flat with a slight dip in the middle. Shoal ground connects the island with the Lahchi Islands.

Shrub Rocks, which lie 1 mile SSE of the Lahchi Islands, have been previously described in paragraph 8.51.

Directions.—A vessel should approach the N entrance of Fell Passage with the E extremity of Sa Kyun bearing 203˚, and when about 0.2 mile E of the islet lying close N of it, should alter course to about 195˚. When nearing the NW side of Kala Kyun, a vessel should keep at a distance of about 0.3 mile from it until the channel between Yemyok and King Island opens; the W side of the passage should then be gradually approached in order to avoid the shoal depths of 2.7m which lie NE of the N point of Yemyok, and a course shaped to pass about midway between the N point of Yemyok and the E side of King Island.

After passing a large double creek, which does not dry, and when **Sakone Islet** (12˚23'N., 98˚26'E.) is open W of Yemyok Island and bearing 189˚, course should be gradually altered until that islet bears 184˚, or open twice its own breadth E of Nga-thok Kyun. After passing close E of the latter island, the channel leads W of the spit extending N from Payi Kyun, and between it and Myini Islets.

A passage leads on either side of Thanpo Islet; the E passage, although narrower, is more convenient for vessels proceeding to the S. Vessels heading N should use the W passage, taking care to avoid the 2.7m shoal lying about 0.3 mile E of the N end of Thanpo Islet.

South of Thanpo Islet, the channel leads between Payi Kyun and Mye-ni-kyun. Care should be taken to avoid the 2.7m shoal which lies about 0.2 mile NE of the latter island. The course then leads W of Kantaung Kyun and the 4.9m patch which lies about 0.5 mile SW of its NW point, and then about midway between King Island on the NW side and Tatagyi Island, Tatange Island, and Passage Island on the SE side. At springs, the eddies are strong between these islands.

Directions for vessels bound S from Fell Passage through the Bentinck Route are continued in paragraph 8.60.

The Bentinck Route—Northwest Approach

8.55 The NW approach to the Bentinck Route lies between Elphinstone Island and the S part of King Island. Numerous islands, rocks, and dangers lie between the two islands. There are irregular depths, and because of the nature of the adjacent islands, dangers other than those charted may exist. Tide rips and cross currents occur around these islands. Passage through this area should only be attempted by vessels having local knowledge and then only under favorable conditions.

The islands and dangers N of a line joining the N point of Elphinstone Island and a line joining the SE point of Maingy Island have been previously described paragraph 8.46.

Macleod Island (12˚25'N., 98˚09'E.), close off the NE end of Elphinstone Island, is topped by a densely-wooded summit 173m high. Two small islets, joined to the island by a reef, lie off its NE side. A patch, with a least depth of 6.7m, lies about 0.4 mile N of the N islet, and a 3.7m patch lies about 0.3 mile SE of the S islet.

Between Macleod Island and Corbin Island, about 2.3 miles to the N, the water is deep. Tide rips, overfalls, and variable currents prevail.

Swirl Rock (12˚25'N., 98˚11'E.), an isolated patch of rock, 1.5m high, lies about 1 mile E of Macleod Island. Shoals extend about 0.8 mile S from this patch. Depths of 14.6 to 27.4m exist in the channel between the island and the rock.

Johnny Island (12˚22'N., 98˚14'E.), 149m high, lies 4 miles SE of Macleod Island. This densely-wooded island is fringed by a reef and indented by small shallow bays.

Anchorage can be taken, in a depth of 9.1m, about 1 mile SW of the SW extremity of the island.

Six similar small islands lie between Maingy Island, Macleod Island, and Johnny Island. Wilson Island, Evans Island, and Robert Scott Island comprise one group. Wood Island and Dauglish Island lie between this group and Johnny Island. Several drying patches and shoal areas exist in the vicinity of these islands. Tide rips and cross currents occur in this area.

A sheltered area is formed by the NE side of Elphinstone Island, the S side of Macleod Island, and the N side of Grants Island. This latter island is densely wooded, hilly, and indented by many shallow bays.

8.56 Allans Island (12˚21'N., 98˚11'E.), 155m high; Patons Island; Oates Island; and Bomford Island form the E side of the sheltered area. Numerous other small islands lie within this area which is marked by irregular depths.

The N entrance of this sheltered area lies between Elphinstone Island and Macleod Island, but should not be used because of the narrow channel and foul ground which lies off the NE end of the former island.

The E entrance, which lies between Macleod and Bomford Islands, should not be used because of the many islands and dangers within the entrance. A drying rock lies 183m NE of Oates Island.

La-e-ale Island (12˚20'N., 98˚15'E.), densely wooded and 93m high, lies a little more than 0.8 mile SSE of Johnny Island. Two small islets lie between these two islands.

La-e-atet Island (12˚18'N., 98˚15'E.), densely wooded with a high prominent peak, lies close S of the above island. This peak appears conical when viewed from the N.

Haycock Island (12˚17'N., 98˚10'E.), densely wooded and 215m high, is the largest and highest of a group of islets and rocky patches which lie from 2.5 to 5.5 miles W of La-e-atet Island. Other islands of this group consist of Rat, Rock, Flat, Humpty, Mouse, and Dumpty Islands. Mouse Island, 82m high, lies about 4.3 miles W of La-e-atet Island. This island should not be confused with another island of the same name about 2.5 miles S of La-e-atet Island.

The channel, between Grants Island and the N side of Ross Island, about 2.3 miles to the S, has a least charted depth of 6.1m in the fairway. The greater depths are found close to the former island. This channel has not been closely examined.

The Bentinck Route—West Approach

8.57 Sir Charles Metcalfe Island (12˚17'N., 97˚47'E.), at the SW entrance of Mermaid Passage and the islands between it and Kabosa Island, about 29 miles to the N, have been previously described in paragraph 8.44.

West Spur and East Spur, two islets about 1 mile apart, lie on a rocky shoal about 1 mile S of Sir Charles Metcalfe Island. The intervening channel is foul.

Brunnette Island (12˚14'N., 97˚52'E.) lies about 5 miles, Greenlaw Island about 8.5 miles, and Lion Island about 11.8 miles E, respectively, of East Spur Islet.

Thankes Islet (12˚15'N., 98˚01'E.) lies about 2.5 miles NE of Lion Island and close SE of the S end of Elphinstone Island. Shagstone Island lies 1 mile SE of Thankes Islet. Knap Island, Basham Island, Middle Island, and Pym Island extend about 5 miles S from Shagstone Island.

Knap Island (12˚13'N., 98˚02'E.) and Basham Island are separated from the W side of Ross Island by a channel restricted to a width of 0.3 mile by rocks, and having a least depth of 5.5m. Pym Island, steep-to and conical, is about 122m high.

Bailey Island (12˚08'N., 97˚44'E.), 354m high in its N part, lies about 7.5 miles SSW of Sir Charles Metcalfe Island. The W islets of a group, that extends about 7.5 miles E, lie 11 miles E of Bailey Island. This group consists of ten islands. Howe Island, the largest and highest of the group, rises to an elevation of 246m.

Hattrass Passage (12˚11'N., 97˚44'E.) lies between West Spur Islet and East Spur Islet to the N and Bailey Island to the S. The passage is deep and clear.

Henry Prinsep Island (12˚03'N., 97˚38'E.) lies about 5 miles SW of Bailey Island. Tower Rock, an excellent landmark, lies at the N end of the island. Sargent Island, 366m high, is separated from Henry Prinsep Island by a narrow foul channel.

Chester Island (12˚02'N., 97˚46'E.), 290m high, lies about 4 miles E of Sargent Island. Reefs have been reported to extend some distance S from the SW extremity of Chester Island. These dangers may extend across the passage between this island and Mackenzie Island.

Observation Island (11˚59'N., 97˚55'E.), densely wooded and 169m high, lies 9 miles E of Mackenzie Island.

8.58 Courts Island (11˚57'N., 98˚00'E.), 344m high, lies about 3 miles ESE of Observation Island and is bordered along its N side by foul ground. The island summit appears as a volcanic cone when viewed from the N. During the Southwest Monsoon, anchorage can be taken, in depths of 7.3 to 9.1m, in a bay on the NE side of the island. The sandy beach abreast this anchorage is foul up to 137m offshore. During the Northeast Monsoon, good anchorage can be taken, in a depth of 9.1m, off a sandy beach at the E end of the head of the bay on the S side of Courts Island.

East Islet (11˚57'N., 97˚45'E.), 57m high, lies 2.3 miles S of Mackenzie Island. West Island, slightly lower, lies 5 miles SW of the same island. Lunka Rock, which dries 1.8m, lies 8.5 miles ESE of East Islet.

Hayes Island (11˚52'N., 97˚40'E.) lies 7 miles S of Sargent Island and rises to a height of 486m. A rock, 4.6m high, lies close N of Hayes Island. Fletcher Island, 256m high, lies 0.8 mile S of Hayes Island.

The **Great Western Torres Islands** (11˚47'N., 97˚30'E.) are the W group of the Mergui Archipelago Island group. They lie from 6.5 to 12 miles W of Fletcher Island. The two largest islands of the group are separated by a channel with a least depth of 5.5m in the middle of the fairway.

The Great Western Torres Islands have been reported to be a good radar target up to 23 miles.

Small vessels with local knowledge can anchor in a cove on the shore of the SW island of the two larger islands about halfway through the channel. Larger vessels can anchor off the cove entrance, in depths of 27.4 to 29.3m, but the holding ground is only fair and the anchorage is exposed to swells. Vessels should enter through the NW end of the channel with Northeast Little Torres Island bearing 131˚ and showing through the entrance. When the cove opens, anchorage can be taken as convenient.

The **Little Torres Islands** (11˚43'N., 97˚35'E.) consist of Northeast Little Torres Island, of moderate elevation, with a reef about 0.5 mile W of it, and a group of three islets in the form of an elipse between 4.5 miles SE and 10 miles S of Great Western Torres Islands. The highest islet of the group appears as two islets and has a needle-shaped rock off it. Vessels should not approach within 3 miles of the Little Torres Islands group.

Nearchus Rock (11˚42'N., 97˚52'E.), which covers at HW, lies about 13 miles SE of Fletcher Island.

Nearchus Passage (11˚53'N., 97˚34'E.) connects with the Bentinck Route from the W and lies between Fletcher Island, Lunka Rock, and Courts Island to the N and the Great Western Torres Islands, Nearchus Rock and Bentinck Island to the S. The peak on Bentinck Island is not conspicuous from this passage.

Directions.—From a position about 2 miles N of the Great Western Torres Islands, steer to pass 1.5 miles S of Fletcher Island. Then steer to pass 1 mile S of Courts Island, then about 1 mile NW of Christmas Island which lies about 9 miles ENE of Courts Island, where the track joins the Bentinck Route.

The Bentinck Route—Fell Passage to Christmas Island

8.59 The Bentinck Route leads from the S end of **Fell Passage** (12˚17'N., 98˚21'E.) for about 90 miles S to the N end of Forrest Strait, passing between Bentinck Island to the W and Domel Island to the E.

Pinbwa Island (paragraph 8.38), the Lahchi Islands (paragraph 8.54), and Shrub Rocks (paragraph 8.51) have been previously described.

Mouse Island (12˚15'N., 98˚15'E.), 53m high and conical, lies 5.5 miles SW of the S end of Fell Passage.

Mayan Island (12˚15'N., 98˚17'E.), 62m high and rounded, lies 1 mile E of Mouse Island. Lump Rock, 6.1m high, lies about 1.3 miles S of the same island. Medina Patches, composed of gravel and having a least depth of 2.7m, rise from a sand and mud bank which extends about 3.3 miles ESE from Mayan Island. White Rock, 3.7m high, lies about 1.8 miles SW of Mouse Island.

Cantor Island (12˚13'N., 98˚15'E.), 109m high, lies about 0.8 mile SE of White Rock. A rock, with a depth of less than 1.8m, lies 1.3 miles ENE of the S end of Cantor Island, with foul ground in between.

Ross Island (12˚13'N., 98˚06'E.), marked by a prominent, double summit 245.6m high on its SE side, lies 7 miles W of Cantor Island. The N part of the E coast is foul with drying rocks lying 0.5 to 1 mile offshore. Griffiths and Helfer Islands, both fairly high, lie between Ross Island and Cantor Island.

Martin Island (12˚07'N., 98˚09'E.), actually an islet 64m high, lies 1.5 miles S of the S point of Ross Island. Two larger islets lie in between.

Mewstone Island (12˚04'N., 98˚02'E.), 152m high, Lloyds Island, Drakes Island, and Criddles Island lie close together from 8 to 13 miles SW of the double summit near the SE extremity of Ross Island. The area between the latter three islands is foul. A rock, 4.6m high, lies close off the NW end of Criddles Island. Button Island, 17m high, lies 2 miles E of the S end of the same island.

The Mergui Islands (paragraph 8.51) and Auckland Bay (paragraph 8.52) have been previously described.

8.60 **Hext Rock** (12˚08'N., 98˚16'E.), which has a least depth of 0.3m and is marked by ripples or breakers, lies about 4.3 miles S of Cantor Island. The summit of Cantor Island, in line bearing 002˚ with the 199m peak on La-e-atet Island, leads W of this rock.

Christmas Island (12˚00'N., 98˚09'E.), 137m high to the tops of the trees and lying about 6.5 miles S of Martin Island, is the furthest N island of a group of islets and rocky patches. The island is densely wooded. The S side is bold and fronted by off-lying rocks. The indented N side is fronted by shoals extending 0.5 mile NE from it. The summit of the island is prominent from the S. Vessels can pass 0.5 mile off the W side of the island, but the currents are strong during the flood.

Double Rock (12˚01'N., 98˚11'E.), 13.7m high, bare and having two summits, lies 2.5 miles ENE of Christmas Island. Single Rock, 4.6m high, lies about 0.5 mile N of Double Rock.

Directions.—Vessels proceeding S from Fell Passage through the Bentinck Route should pass about 0.5 mile W of Pinbwa Island and should then bring the SW point of King Island in line bearing 340˚ with the sharp peak on Maingy Island. A course of 160˚ should then be steered with the range astern until Shrub Rocks bear 046˚. Course should then be altered to 229˚ until the S end of Cantor Island bears 316˚, distant 1.8 miles, when course should be altered to 222˚ which leads about 1 mile NW of Christmas Island.

Note that the double peak on the S end of Ross Island, kept well open S of the S end of Cantor Island, leads S of the banks which extend E from the latter island.

Small vessels can cross the shoal E of Medina Patches by keeping the E side of Pinbwa Island open NW of Tatange Island and bearing less than 034˚.

Caution.—Vessels must guard against being set S between Cantor Island and Hext Rock.

The Bentinck Route and Adjacent Coasts

8.61 **Basin Island** (11˚59'N., 98˚10'E.), 61m high and sparsely wooded on its N side, lies 1 mile SE of Christmas Island. An islet lies about midway between the two islands.

The Bentinck Route leads from the S end of Fell Passage to the N end of Forrest Strait, about 90 miles to the S. It passes between Bentinck Island on the W and Domel Island on the E. The N end of the route has been previously described in paragraph 8.55.

The coastal area abreast of the Bentinck Route is indented by numerous mangrove-filled inlets with meandering tidal currents at their heads. The shores are extensive mangrove

swamps and mudflats with a few areas of rocky headlands and several short, narrow, sandy beaches. Mountain rangestrending N and S lie close inland along the S part of this coast.

The coastal islands are low and swampy, whereas, the offshore islands are generally high, rocky, and well-wooded.

Tides—Currents.—In the N approaches to the Bentinck Route, the tidal currents set SSE on the rising tide and in an opposite direction on the falling tide, at rates of about 2 knots in open waters. Tide rips, eddies, and overfalls are found in the narrow channels.

Near the S entrance of Fell Passage and in the vicinity of Shrub Rocks, the tidal currents set E on the rising and W on the falling tide, at rates of about 2 knots.

Between Shrub Rocks and the Pickwick Group, about 14.5 miles SSW, the tidal currents set SE on the rising and NW on the falling tide. Rates of 4 to 5 knots have been reported at springs.

Between Courts Island and Parker Island, about 13 miles E, the tidal currents set NE on the rising and in an opposite direction on the falling tide. A set onto the SW side of Christmas Island occurs during the rising tide. The rate at springs on the rising tide is 1.3 knots; that on the falling tide is 1.8 knots.

Between Bentinck Island and Domel Island, N of West Passage Island, the tidal currents set NE on the rising and SW on the falling tide, with rates at springs of about 2 knots. In the more open waters NE of South Passage Island (11˚46'N., 98˚07'E.), the tidal currents set N on the rising and S on the falling tide, with rates at springs of about 1 knot.

At a position about 4 miles S of the S end of Bentinck Island, the tidal currents at the start of the rising tide set ESE and then turn gradually through E to NE. The tidal currents set WSW during the falling tide. The rate of both currents at springs is about 1.5 knots.

East of **Maria Island** (11˚27'N., 98˚00'E.), the tidal currents set SE during the rising and NW during the falling tide, with rates at springs of about 1.3 knots. Between the S end of Domel Island and Carew Island, about 2 miles S, the tidal currents set NE during the rising and SW during the falling tide, with rates at springs of over 3 knots. The tidal currents are also strong between High Peaked Island and Bushby Island, and in Jubilee Channel. Rips occur in this channel, especially off its E entrance.

Between Bushby Island and Owen Island, 8.5 miles SSE, the tidal currents set NE or ENE during the rising tide and in reverse directions during the falling tide, with rates at springs of about 1.5 knots.

In the N approaches to Forrest Strait, between **Bernard Island** (11˚11'N., 98˚16'E.) and Dolphin Islands, about 14.5 miles S, the tidal currents set ENE during the rising and in an opposite direction during the falling tide, with rates at springs of about 1.5 knots.

Depths—Limitations.—The approaches to the outer islands of the Mergui Archipelago are deep and clear of dangers, but navigation through them is intricate and dangerous. The approaches to the mainland coast are greatly encumbered by these islands and the extensive mudflats and shoals closer inshore.

There are considerable depths in the fairway of the Bentinck Route between Christmas Island and the entrance of Forrest Strait. Caution is necessary, however, because there are no navigational aids and the channels have only been partially examined. The least depth in the fairway between West Passage Island and Elephant Island, about 2.3 miles to the ENE, is 6.4m; the greatest depths are formed near West Passage Island.

Directions.—The track from Rangoon to Singapore leads well seaward of the Mergui Archipelago. Navigation through this group is very intricate and dangerous to those not possessing local knowledge.

8.62 The Bentinck Route.—Vessels should follow the directions previously given in paragraph 8.60 to a position about 1 mile NW of Christmas Island and then to a position about 1 mile W of that island. From this latter position a course of 176˚ should be steered, which leads about midway between Warning Rock and Biddy Rock and between Cap and Feathers Rock and West Passage Island. Allowance should be made for the currents as soundings give little warning of the approach to the dangers in this area.

When the summit of **South Passage Island** (11˚46'N., 98˚07'E.) bears 270˚, course should be altered to 195˚ which leads about 0.5 mile E of Bluff Point the S extremity of Bentinck Island. When this point comes in line bearing 005˚ astern with the W end of South Passage Island, course should be altered to about 185˚ so as to pass about 1 mile W of **Fly Rock**(11˚30'N., 98˚06'E.).

When Fly Islet, which lies about 2.3 miles SE of Fly Rock, bears 090˚, distant 3 miles, course should be altered to 180˚, passing about 0.7 mile W of Cone Islet. When the summit of Jane Island (11˚22'N., 98˚01'E.) bears 279˚, course should be altered to 152˚ which leads about 1.8 miles NE of Celia Rock, about 4 miles NE of Father Island, and about 2 miles SW of High Island at the entrance of Forrest Strait.

South Passage Island is difficult to identify from the S. Vessels bound to the N should keep **Cone Islet** (11˚23'N., 98˚06'E.) bearing not more than 180˚ astern, and well open W of Bushby Island until Fly Rock is passed.

Christmas Island to Bentinck Island

8.63 Courts Island (11˚57'N., 98˚00'E.), on the W side of the Bentinck Route fairway, has been previously described in paragraph 8.58.

Pickwick Island (12˚01'N., 98˚16'E.) and Weller Island, the W islands of the Pickwick Group, are densely wooded, and fairly high and lie about 5.5 miles E of Christmas Island. This group lies on the W side of the entrance of Morrison Bay. Bare Rocks, both small, lie between Weller Island and the N end of Parker Island, about 0.5 mile to the S. During spring tides, strong eddies occur in this vicinity.

Holly Island (12˚00'N., 98˚12'E.), 39m high, wooded, and having a prominent summit, lies 2 miles ESE of Christmas Island. Dangers lie within a radius of 1 mile of Holly Island. Stodart Rock, a small pinnacle with a depth of 1.8m, lies about 2.5 miles S of this island.

Parker Island (11˚57'N., 98˚15'E.), Trotter Island, and Money Island, which lie S of the Pickwick Group, form the E side of the Bentinck Route. All three islands are densely wooded; their W sides are indented by small sandy bays. An

intricate, but rather deep channel about 0.5 mile wide, separates Parker Island from Trotter Island. Strong currents set through this channel. The channel between Trotter and Money Islands almost dries. The channel between Money Island and Domel Island is narrow and intricate.

Amie Island (11˚56'N., 98˚13'E.), small but high and densely wooded, lies 4.8 miles SE of Christmas Island. A prominent summit tops the island.

Williams Reef (11˚55'N., 98˚11'E.), which dries 1.2m, lies about 1.8 miles SW of Amie Island. Biddy Rock, with a least depth of 4.9m, lies 1.5 miles farther SW.

Warning Rock (11˚54'N., 98˚05'E.), which dries 0.6m, lies on the W side of the fairway about 6.8 miles SSW of Christmas Island. The Bentinck Route track passes midway between this rock and Biddy Rock.

Whale Rock (11˚52'N., 98˚05'E.), 9.1m high, lies 1.8 miles S of Warning Rock. A shallow patch lies close SE of Whale Rock.

Zahora Rock (11˚52'N., 98˚01'E.), awash and steep-to, lies 1.3 miles N of the N end of Bentinck Island.

8.64 Marian Island (11˚51'N., 98˚12'E.), sparsely wooded, lies about 5 miles S of Amie Island. A high conspicuous peak lies at the W end of the island. Two fairly high summits lie in the E part of the island. The saddle in between is prominent from the S.

A group of islands and rocks, including Rosie and Biddy Islands, lies between Marian Island and Amie Island. A prominent summit lies on the NW side of Rosie Island. Biddy Island consists of two parts connected by a causeway. A foul channel separates this group from Trotter Island to the E.

A pinnacle rock, with a least depth of 3.4m, lies about 1.8 miles S of Marian Island. Several islets and rocks lie between this island and the rock.

Elephant Island (11˚50'N., 98˚10'E.), which appears flat-topped from the offing, is 58m high and wooded. It lies about 1.8 miles SW of Marian Island and marks the E side of the channel abreast West Passage Island.

Cap and Feathers (11˚50'N., 98˚09'E.), a single rock 13.7m high, lies 0.8 mile NW of Elephant Island. A drying rock lies about 91m W of this rock. A 5.5m shoal lies about 0.5 mile N of the same rock.

Peterson Rock (11˚50'N., 98˚06'E.), which dries 1.8m, lies on the W side of the fairway about 3.5 miles W of Elephant Island.

Crown Island (11˚50'N., 98˚05'E.), 61m high and steep-to on its N side, lies 1.5 miles W of Peterson Rock.

West Passage Island (11˚49'N., 98˚07'E.) lies 2.5 miles WSW of Elephant Island and is bold and wooded. The island is steep-to on its E side.

Dennis Rock (11˚49'N., 98˚06'E.), 4m high, lies 1 mile WSW of West Passage Island.

Bentinck Islands—Off-lying Islets and Rocks

8.65 Bentinck Island (11˚45'N., 98˚02'E.), with a very irregular, indented coast, is separated from Courts Island by a deep channel about 0.3 mile wide. The island is densely wooded and hilly. A bold flat-topped hill, 294m high, lies 2 miles off the N end of the island. A prominent, higher peak rises about 2.5 miles SSE of this hill and appears as a horn when viewed from the NE or SW. Another prominent hill lies about 10 miles SSW of this peak.

The island is surrounded by fairly deep water on all but its E side, which is fringed by a shoal which extends up to 2 miles offshore.

The W coast of Bentinck Island is rugged, wooded, irregular, and fronted by several islets which lie up to 2 miles offshore.

The N inlet of three, which indent the W coast, lies about 9 miles NNW of Bluff Point and provides anchorage, in a depth of 9.1m, in a bay indenting its N shore.

The middle inlet, which lies 7 miles NNW of Bluff Point, provides anchorage in a cove along the N shore in a depth of 9.1m. Only small vessels with local knowledge can be accommodated.

The S inlet, which lies 4.3 miles NW of Bluff Point, provides anchorage to small vessels with local knowledge, in depths of 11 to 27.4m.

The E coast of Bentinck Island is indented by North Bay and two other inlets. Thompson Island, 305m high, is separated from the NE coast of Bentinck Island by a narrow, shoal channel. North Bay lies on the W side of Thompson Island and provides anchorage, in depths of 11 to 27.4m.

South Passage Island (11˚46'N., 98˚07'E.), bold and wooded, lies about 3.3 miles S of West Passage Island. A drying reef lies about 0.3 mile NE of the N point of South Passage Island, with shoal depths in between. During the Southwest Monsoon, anchorage can be taken between these two islands about 2 miles E of the S end of Thompson Island.

Doris Rock (11˚43'N., 98˚06'E.), which dries, and Daphne Rock, awash, lie 6 miles N and 4.5 miles N, respectively, of Bluff Point.

The S part of the E coast of Bentinck Island is indented by two inlets about 2.8 and 4 miles N of Bluff Point. Small vessels with local knowledge can anchor in the N arm of the S inlet.

Several rocks lie off the S end of Bentinck Island. Perforated Rock, 24m high and bare, lies 1.5 miles WSW of Bluff Point. Fish Rock, 3m high, lies 1 mile SSW of Perforated Rock.

Perforated Rock has been reported to be a good radar target up to 22 miles.

Domel Island (11˚39'N., 98˚15'E.), one of the largest islands of the Mergui Archipelago, lies roughly parallel with and 7 to 13 miles E of Bentinck Island. Several densely wooded conspicuous peaks lie on the island and range from 488m to 683m high. Sanderson Hill rises to a bare summit, 539m high, 9.5 miles SSW of the N end of the island. The W coast is indented by many bays with sandy beaches at their heads.

Livock Bay (11˚28'N., 98˚14'E.), on the S coast of the island, contains numerous dangers, but small vessels with local knowledge can anchor, in a depth of 7.3m, in the N arm of the bay. Protection is provided during the Southwest Monsoon.

Pigeon Island (11˚47'N., 98˚13'E.), 119m high near its N end and wooded, lies 3 miles W of the NW point of Domel Island. A shoal spit extends almost 0.5 mile N from the island.

Bentinck Island to Forrest Strait

8.66 West side of the Bentinck Route.—Tree Island (11˚32'N., 97˚58'E.) lies about 9 miles SW of the S end of

Bentinck Island. Northwest Islet lies 3 miles farther WSW and Flat Islet lies 1.8 miles SW of Tree Island.

Five Sisters (11˚23'N., 98˚00'E.) consist of a group of islands and rocks which lie between 10 and 20 miles SSW of the S end of Bentinck Island. Maria, Eliza, Jane, Anne, and Charlotte are the principal islands of the group. These wooded islands are rocky and precipitous on the their W sides, and marked by sandy beaches on their E sides.

Maria Island (11˚27'N., 98˚00'E.), irregularly-shaped and fairly high, is marked by four distinct peaks. Two small islets lie within 0.5 mile N of the N end of the island. A fairly high rock lies close off the NE end of the island. Violet Island, wooded and having a grassy summit, lies 0.5 mile SE of Maria Island. Several above-water rocks lie in between the two islands. Maria Rock, 13.7m high, lies almost 1 mile E of Violet Island. A rock, 6.1m high, lies 183m NW of the rock.

Small vessels with local knowledge can anchor in a small bay on the N coast of Maria Island, in a depth of 12.8m, sand, 0.5 mile SSE of the NW end of the island. Protection is provided during the Southwest Monsoon.

Eliza Island (11˚24'N., 98˚00'E.), 204.2m high, lies about 1.3 miles SW of Violet Island. Northeast Quoin Island lies 1 mile E of the SE end of Eliza Island. Eliza Rock, 10.7m high and bare, lies 2 miles SE of the N end of the same island. Umbrella Rock, 22.9m high with a drying rock 137m S of it, lies 0.6 mile SSE of Northeast Quoin Island.

Jane Island (11˚21'N., 98˚01'E.) lies 1 mile S of Eliza Island and is 207m high. Jane Rock, 12.2m high and bare, lies about 2 miles ENE of the N end of Jane Island. A rock, 3m high, lies about 0.2 mile SSE of Jane Rock. A smaller rock lies 91m NW of Jane Rock.

Janet Island (11˚21'N., 98˚01'E.), densely wooded and 88m high, lies 0.4 mile SE of Jane Island. Two rocky ledges lie in between.

Anne Island (11˚20'N., 98˚00'E.), the next island to the S, rises to a height of 204m. Two isolated rocks lie about 3.3 miles W of the N end of Anne Island. Small vessels with local knowledge can anchor, in a depth of 14.6m, sand, in a bay about 0.5 mile SSE of the N end of Anne Island.

Charlotte Island (11˚19'N., 98˚01'E.), separated from Anne Island by a narrow channel, is 157m high. Charlotte Rock, 21m high and bare, lies about 0.3 mile ENE of the island of the same name. May Island, 41m high and densely wooded, lies 137m E of Charlotte Island. Pin Island, steep-to and densely wooded, is 62m high and lies about 0.2 mile ESE of South Quoin Islet. This latter islet is 78m high and lies 183m S of May Island.

Celia Rock (11˚19'N., 98˚04'E.), awash, lies 2 miles ENE of May Island. Depths of 14.6m exist about 0.5 mile SE of this rock.

Black Rock (11˚23'N., 97˚40'E.) lies isolated about 18.5 miles WSW of Maria Island and can be seen for a distance of 8 miles.

8.67 Coopers Driver Island (11˚27'N., 97˚55'E.), rugged and partly wooded, lies 5 miles SW of Charlotte Island. A small islet lies close off the SW end of the island, but it is steep-to on its E and W sides. A bare islet, connected by a chain of rocks to a similar islet about 1 mile to the E, lies close off the N end of the island. Strong eddies prevail during the strength of the tidal currents.

Hen and Chickens, a group of six rocks, lies 2.5 miles S of Charlotte Island. The S rock of the group rises to a height of 15.2m and is the largest of the group.

Son Island (11˚12'N., 98˚05'E.) and Father Island, both bare, lie close together about 5.5 miles SE of Hen and Chickens. The S and W sides of Father Island are marked by red streaked cliffs. A rock, 0.9m high, lies 0.6 mile N of Son Island. Two other rocks, which dry 2.4m, lie almost 0.3 mile N of this rock.

High Peaked Island (11˚27'N., 98˚08'E.), 1 mile W of the SW extremity of Domel Island, rises to a prominent, densely-wooded summit 302m high. Second Observation Island, 70m high, cliffy and wooded, lies 0.4 mile N of the N end of High Peaked Island. Fly Islet and Mosquito Islet lie within 0.5 mile NE of Second Observation Island. A drying rock lies close SW of Mosquito Islet. A similar rock lies 1.5 miles ESE of Second Observation Island. Fly Rock, a small, steep-to pinnacle awash, lies 2.3 miles NW of Fly Islet and is difficult to distinguish.

Bushby Island (11˚24'N., 98˚08'E.), bold and topped by many high wooded peaks, lies 2 miles SW of the SW extremity of Domel Island.

Cone Islet (11˚23'N., 98˚06'E.), 65m high, conical and heavily wooded, lies 1.5 miles S of the W end of Bushby Island.

Constitution Bank (11˚24'N., 98˚04'E.), having a least depth of 12.5m, lies between Bushby Island and the Five Sisters.

Vessels with local knowledge can anchor, in a depth of 14.6m, close outside a line joining the entrance points of a small sandy cove near the NW point of Bushby Island.

Dorothy Island (11˚24'N., 98˚11'E.), 85.3m high, lies 2 miles ESE of the NE point of Bushby Island. Within about 6 miles E and ESE of Dorothy Island, there are a group of densely-wooded islands and rocks. These include Carew Island, North Park Island, South Park Island, Ravenshaw Island, and Wendy Island. Alligator Rock, 4.6m high, lies 1.5 miles E of Ravenshaw Island.

Jubilee Channel (11˚19'N., 98˚15'E.), a fairly-wide, deep passage, branches off from the Bentinck Route in an ENE direction between Ravenshaw Island and Alligator Rock. The currents are strong in this passage.

Katherine Island (11˚18'N., 98˚13'E.), 75m high and wooded, lies in the SW entrance of Jubilee Channel. Vessels can pass N of it, or between it and Barbara Island, about 1.5 miles to The S. The latter island is 79m high and densely wooded.

Sir J. Malcom Island (11˚18'N., 98˚15'E.) has two prominent summits. Both summits rise to elevations of over 366m.

A drying rock lies about 0.6 mile WSW of Barbara Island.

Three islets lie S of Barbara Island and close off the SW extremity of Sir J. Malcom Island. An islet lies in the middle of an inlet on the E side of the latter island.

8.68 Paines Reef (11˚18'N., 98˚18'E.), composed of drying coral, lies 1 mile E of the NE side of Sir J. Malcom Island. A rocky patch, with a least depth of less than 1.8m, lies 1.3 miles S of Paines Reef. Haldane Island, 41m high and heavily

wooded, lies 4.8 miles SE of the N end of Sir J. Malcom Island.

A navigable passage, 0.3 mile wide, separates the last-named island from Owen Island to the S. Jubilee Channel is considered to be the safer of the two.

Owen Island (11˚14'N., 98˚15'E.) has three distinct summits; the S summit is 381m high and the other two are each 472m high. Sinclair Bay indents the W side of the island and has a sandy beach about 1 mile long. Small vessels with local knowledge can anchor, in a depth of 14.6m, sand, about 0.5 mile W of a small bluff in the middle of the bay head. Protection is provided during the Northeast Monsoon.

June Bay, bordered by rocky ledges around its shores, lies S of Sinclair Bay. Small vessels with local knowledge can anchor, in a depth of 16.5m, in the entrance of the bay.

Joan Island (11˚15'N., 98˚18'E.), 59m high, lies about 0.8 mile E of the NE end of Owen Island. Doris Island, 85m high, lies 1.5 miles E of the N summit of the same island. Both islands are densely wooded. A drying reef lies almost 1 mile E of the E end of Owen Island.

Maxwell Island, Milne Island, and Bain Island, all small, lie close S of Owen Island.

Bernard Island (11˚11'N., 98˚16'E.), 190m high and densely wooded, lies 0.5 mile S of Owen Island. A deep channel separates the two islands. A shoal bank, with a least depth of 11.3m, extends about 3.5 miles W from the W side of Owen Island. A bank, with a least depth of 14.3m, lies 1.5 miles W of the S end of Bernard Island.

Morrison Bay

8.69 Morrison Bay (12˚00'N., 98˚21'E.) is entered between the Pickwick Group and Saunggyi Kyun, about 10 miles to the NE. The bay extends about 15 miles SSE of Julian, Kennedy, and Tucker Islands near its head. Parker, Trotter, and Money Islands form the W side of the bay and Sellore Island forms its E side. The N side of Kisseraing Island forms the S side of the bay.

Morrison Bay can also be entered from the S by a narrow channel which is approached between Domel and Kisseraing Island. This channel leads between flats which extend from the N parts of these islands into the SW corner of the bay.

The N entrance of Celerity Passage lies in the SW part of the bay.

Parker Island (11˚57'N., 98˚15'E.), 189m high near its SE end, is densely wooded. Numerous islets lie off the E side of the island. Edmund and Wilmot Islands lie close together about 0.5 mile off its NE coast. Pirie Island, densely wooded and conical in shape, lies 1 mile NE of the E end of Parker Island. Tree Island, having shoal ground extending 0.5 mile N from it, lies 0.5 mile NW of Pirie Island.

Star Island, densely wooded and 113m high, lies 1 mile SSW of Pirie Island. This island is the northernmost and easternmost of a group of five islands lying off the SE point of Parker Island. Reef Island, the southernmost, is 50m high and lies 0.5 mile off the NE end of Trotter Island. A small islet lies 0.3 mile E of Trotter Island.

Trotter Island (11˚53'N., 98˚16'E.), the next island S of Parker Island, is 326m high and densely wooded. Whaleback Reef, which dries 1.5m, lies about 1 mile N of the E end of Trotter Island. Shoal patches lie NNW and SW of the reef, but to the E there is deep water.

Heath Rock (11˚55'N., 98˚19'E.), which has a least depth of 1.5m, lies about 1.8 miles NNE of the E end of Trotter Island. Eddies usually mark this rock. Forfar Rock, 1.2m high, lies on a rocky patch about 1.8 miles ENE of the same point.

Money Island (11˚50'N., 98˚17'E.), the next island to the S, is 335m high and heavily wooded. A wooded islet lies in midchannel between this island and Domel Island.

Una Island (11˚52'N., 98˚18'E.), 23m high and separated from Jack Island by a channel, 0.2 mile wide, lies 1 mile NE of the NE end of Money Island. Jack Island, 68m high and sparsely wooded, lies 0.5 mile off the NE side of Money Island. A village lies on the N side of Jack Island.

The channels between the above islands are not to be used because of the strong, irregular currents.

Kayo Island (12˚04'N., 98˚24'E.), 52m high, lies 2 miles SW of the NW end of Sellore Island.

Donnelly Reef (11˚55'N., 98˚25'E.), which dries 1.2m, lies about 8 miles S of Kayo Island. The intervening area is marked by several shoal patches.

Donnelly Island (11˚54'N., 98˚26'E.), 47m high and well-wooded, lies 2 miles SSE of Donnelly Reef. This island lies on the NE side of a channel which leads between Julian and Kennedy Islands.

Lokthama Kyun (11˚54'N., 98˚27'E.), which lies between Donnelly Island and the E shore of the bay, is 79m high and well-wooded. The intervening channel is deep but the currents are strong. A 2.4m patch lies in the S entrance of this channel.

Twin Rocks (11˚53'N., 98˚27'E.), 9.1m high, lie 0.8 mile SSE of Donnelly Island. Bird Rocks, white in color and steep-to, lie 0.4 mile S of Twin Rocks.

8.70 Head of Morrison Bay.—The N coast of Kisseraing Island is fronted by Julian, Kennedy, and Tucker Islands. Julian Island, 134m high on its W side, lies with its SW point about 3 miles NE of the NW end of Kisseraing Island. A village lies near the S end of the island.

An extensive bank, as defined by the 6m curve, extends 6.5 miles NNW from the NW point of Kisseraing Island. Square Rock, 4.6m high, lies near the end of this bank about 2 miles ESE of the E end of Trotter Island. Quoin Rock, 9.1m high, lies 0.8 mile S of Square Rock. Both rocks are jungle covered.

Sidney Island (11˚52'N., 98˚25'E.), 21m high and heavily wooded, lies 0.5 mile N of Julian Island.

Kennedy Island (11˚50'N., 98˚28'E.), 174m high and heavily wooded, lies 1 mile E of Julian Island. Numerous islets and rocks lie between this island and the S end of Sellore Island. A shoal, having a depth of 7.9m, lies between Julian and Kennedy Islands.

Tucker Island, separated from Kennedy Island to the E by a narrow shoal channel, is densely wooded and has two high summits.

Kanmaw Village lies at the NE end of Kisseraing Island. A beacon lies on a rock 0.3 mile NE of the village. Regular sea communication is maintained between the village and Mergui.

Celerity Passage (11˚46'N., 98˚20'E.), narrow and tortuous, leads S from the SW corner of Morrison Bay between Domel Island to the W and the extensive flats known as Leslie's Garden to the E. Jubilee Channel joins this channel about 25

Table of Contents

miles to the S and then leads S to the N entrance of Forrest Strait, about 22 miles distant.

Leslie's Garden (11˚47'N., 98˚20'E.), an extensive flat which dries in places, extends about 5.5 miles NW from the NW end of Kisseraing Island to within 0.5 mile of Jack Island. The flat also extends W for about 4.5 miles from the same point to within a short distance of the E coast of Domel Island.

Morrison Bay—South Approach

8.71 The S approach to Morrison Bay lies between the SE point of Domel Island and Maw-yut Point, the S end of Kisseraing Island about 15 miles ENE.

A bank, with depths of less than 5.5m, extends about 4 miles off the W side of Kisseraing Island, 11 miles WNW of Maw-yut Point.

The Marble Islands, a group of two large and four small islands, lie from 1.5 to 2 miles off the SE side of Domel Island. The group is almost bare of trees and steep-to. The S island of the group is the highest, attaining an elevation of 317m. Small vessels with local knowledge can anchor, in a depth of 11m, off the W entrance point of a cove on the S end of this island. Vessels can anchor off this group of islands according to the monsoon; the greatest depths being found between them and Domel Island.

Sydney Island (11˚32'N., 98˚27'E.), small, wooded, and brown, lies close off the SW point of Kisseraing Island.

Lalla Rookh Island (11˚30'N., 98˚30'E.), 32m high, well-wooded, and having a prominent dark tree at its N end, lies about 2 miles W of Maw-yut Point and is the furthest S of a small group of islands. All of these islands are densely wooded and lie on an area of foul ground which extends about 2 miles offshore.

Small vessels with local knowledge can use Celerity Passage on the last of the flood; the tidal currents are not strong.

Whale Bay

8.72 **Whale Bay** (11˚35'N., 98˚39'E.) lies between the SE side of Kisseraing Island and the mainland to the E. The entrance lies between Maw-yut Point and Wet Kyun, about 9 miles to the E. The bay is approached from the SW, but caution is required because the bay has not been closely examined. Sheltered anchorage can be taken, in depths of 11 to 18.3m, in the S part of the bay.

Pawe Kyun, marked by a prominent tree-covered hill near its S end, lies about 3.3 miles SSW of Maw-yut Point. Firth Rock lies on a reef which extends about 0.5 mile NE from the NE side of the island. Shoal ground, as defined by the curve, extends more than 1 mile farther NE. Shoal ground, with a least depth of 3m, extends 1 mile off the SE side of the island.

Vera Island (11˚29'N., 98˚32'E.), 90m high and wooded, lies 1.5 miles NE of the N end of Pawe Kyun. Vera Shoal, which has a least depth of 11.9m, lies about in mid-channel between Vera Island and Lalla Rookh Island. Tide rips exist in the channel between Vera Island and Maw-yut Point.

Robert Island (11˚24'N., 98˚30'E.), high and heavily wooded, lies close S of the S end of Pawe Kyun.

Fink Island, high and heavily wooded, is the northeasternmost of a group of small islands and rocks that lie up to 5.5 miles SW of Pawe Kyun. The channels between these islands should not be used because of the rips and variable currents.

Malcom Island (11˚18'N., 98˚32'E.), high and densely wooded, lies about 5 miles NE from the outer edge of a shoal tongue which extends 17 miles SW from the mainland. Cheding Flats is that part of the tongue which lies between the island and the mainland.

Alice Island (11˚21'N., 98˚31'E.) lies on a detached shoal, about 1.3 miles in extent, which lies about 2 miles NNW of the N point of Malcom Island.

Barn Island, 114m high and heavily wooded, lies 4.5 miles W of the S part of Malcom Island.

Maw-yut Point (11˚31'N., 98˚32'E.) the W entrance point of Whale Bay, is steep-to on its S and E sides. Wet Kyun, on the E side of the entrance, is 125m high and well-wooded. There is no navigable channel between the island and the mainland. Kyauk Kalat, a small islet of whitish color, lies 0.5 mile S of the island and on the N side of the entrance of Yengan Chaung, a creek bordered by drying flats on both sides of the entrance.

From the entrance of Yengan Chaung, the E side of Whale Bay extends N for about 14 miles to the mouth of the Lenya River at the NE corner of the bay. None of the creeks along this section are as large as the Yengan Chaung.

Campbell Rock (11˚33'N., 98˚34'E.), awash, lies about 3 miles NE of Maw-yut Point and is marked by a beacon with a white circle topmark. The rock consists of two pinnacles and is steep-to on its E side.

Mawgaung-don, a point on the E side of Kisseraing Island, lies 6 miles N of Maw-yut Point. Bhadra Reef fronts the shore for about 3 miles S of Mawgaung-don and extends up to 1.5 miles offshore. A vessel, with a draft of 2.4m, struck a rock on the outer part of this reef about 1.8 miles S of Mawgaung-don.

Northward of Mawgaung-don, the depths decrease and the channel along the NE side of Kisseraing Island almost dries.

The **Lenya River** (11˚40'N., 98˚43'E.) rises close to the Pakchan River and roughly flows from N to S. The small village of Lenya lies 36 miles upstream and can be reached by small light-draft power vessels.

Between **Kabyachaung** (11˚27'N., 98˚43'E.), a 65.8m high islet which lies on the S side of the entrance of Yengan Chaung and the entrance of the Bokpyin Chaung, about 11 miles to the S, the coast is fringed by mangroves and intersected by creeks.

Sadien Ondawagan, the largest of many villages in this area, lies 4.5 miles S of the S entrance point of Yengan Chaung. Cheding Rocks, 12.2m high, lie close offshore about 1.3 miles NW of this village.

Kho Gyun, 65m high, well-wooded, and prominent, lies 5.5 miles SSW of the same village. A shoal, which dries in places, extends about 0.5 mile NE from the island.

Boat Rock (11˚18'N., 98˚41'E.), about 0.4 mile N of Kho Gyun, is 15.2m high. Bhadra Rock, about 0.5 mile W of Boat Rock, dries 0.9m.

Small vessels can anchor, in a depth of 7.3m, about 1 mile S of Kho Gyun.

A small village lies on the S side of the entrance of Bokpyin Chaung, a creek about 7 miles S of Sadien Ondawagan. A prominent house lies on a hill behind the village.

The coast between Bokpyin Chaung and the islands forming the N side of Karathuri Bay, about 13 miles to the S, is indented by creeks and marked inland by high hills.

8.73 Nopu Taung Saba (Elephant Rock) (11˚13'N., 98˚39'E.), 48m high and prominent, lies 4.5 miles SW of Kho Gyun. This islet is the northwesternmost of a group of islets and rocks which lie on the S side of the approach to Bokpyin Chaung. Numerous rocks and reefs lie between this group and the mainland. Needle Rocks lies 1.3 miles NE of Nopu Taung Saba.

Pulau Ting-nga (11˚12'N., 98˚39'E.), a group of three conical rocks, lies about 1.5 miles S of Nopu Taung Saba. The S rock rises to a height of 21m. Foul ground extends 14 miles NE and 0.8 mile E from these rocks.

Pulau Ampat (11˚10'N., 98˚37'E.), three well-wooded islets, lie 3.5 miles SSW of Nopu Taung Saba. The S islet is 76m high. From a distance, these islets appear as one. Foul ground extends about 1.5 miles ENE from these islets.

North Cone Island, about 2 miles SSW of Pulau Ampat, is 30m high. Pualu Kyin Ngai, 69m high, lies 4 miles WSW of North Cone Island, Pualu Panyam, 73m high, lies 3 miles farther SW.

An islet, 43m high, lies near the S end of the shoal ground that extends 3 miles S from Pulau Panyam.

Karathuri Bay (10˚58'N., 98˚36'E.) lies between Carnac Island and Jenkins Island to the N, and Kyeinni Taung and the Brothers Islands to the S. Carnac Island and Jenkins Island are surrounded by numerous islands, all lying on an extensive mud bank, about 6 miles SSE of North Cone Island. A narrow, shoal channel separates this mud bank from the mainland to the E.

Carnac Channel, which leads into Karathuri Bay from the N between Carnac Island and Kauye Kyun, about 3 miles to the W, is suitable only for small vessels with local knowledge. Some of the reefs and shoals in this channel are marked by beacons.

Warrington Straits (10˚55'N., 98˚30'E.) leads into Karathuri Bay from the W between Collies Island and Kauye Kyun to the N, and Mingyi Sakan, Sir Robert Campbell Island and Kandaw Island on the S. Kyaukmedaung and Tunnel Rock, which is conspicuous, lie close N of Kandaw Island. This latter island is 80m high.

A group of islets and rocks lie within 0.8 mile from the S end of Kauye Kyun. A rock, with a depth of less than 1.8m, lies 1.5 miles S of this group and 0.8 mile ENE of Mingyi Sakan.

Riou Island (10˚56'N., 98˚26'E.), 65m high, lies on an area of shoal ground, about 1.3 miles S of Collies Island. The intervening channel is known as Warrington Passage.

Kinnears Passage (10˚59'N., 98˚28'E.) separates Collies Island from Kauye Kyun, but is suitable only for small vessels with local knowledge.

Anchorage can be taken, in a depth of 11m, about 0.5 mile E of an islet which lies about 2 miles N of Tunnel Rock.

Forrest Passage and Forrest Strait—West and Southwest Sides

8.74 Forrest Passage (11˚05'N., 98˚04'E.) is 16 miles wide at its entrance between Father Island, previously described in paragraph 8.67, and North Sentinel Islet, and leads ESE for about 15 miles to the N entrance of Forrest Strait.

North Sentinel Islet (10˚57'N., 97˚58'E.), small and steep-to, has a rock close off its W side.

Clara Island (10˚54'N., 97˚55'E.) rises to two summits and lies 1.5 miles SW of North Sentinel Islet. The N summit is 534m high and the S summit is sharp. South Sentinel Islet lies 0.5 mile S of the S point of Clara Island.

Kanzagyi, an island 173m high, lies 2.8 miles E of Clara Island. Wa-ale Kyun (Blunt Island), 314m high, lies 1 mile farther E.

A reef, partly above and below-water, lies within 2 miles SW of Kanzagyi.

Forrest Strait (10˚50'N., 98˚21'E.), entered between the N end of Sullivan Island and Collies Island, about 15 miles to the E, is a deep-water, sheltered passage available to deep-draft vessels. At its N end, Forrest Strait connects with Forrest Passage, the Bentinck Route, and the route from Morrison Bay through Celerity Passage. Investigator Channel leads from the W into the strait.

The strait extends about 70 miles S as far as the entrance of the Pakchan River, and leads between the mainland coast and a chain of islands, islets, and rocks which lie from 10 to 12 miles offshore. A group of islands, about 18 miles S of the N entrance of the strait, lie in the fairway and divide the strait into two channels. Areas of discolored water are found throughout the strait.

Tides—Currents.—The tidal currents in Forrest Passage set E with the rising tide and W with the falling tide. The rate is about 2.3 knots at springs.

Overfalls and eddies occur about 2 miles W of High Island. Within the strait, the tidal currents set N with the rising tide and S on the falling tide, with rates at springs of about 1 knot. In the vicinity of the channels between the islands on the W side of the strait, the directions are NE on the rising and SW on the falling tide, with rates of 1.3 to 1.5 knots at springs.

In Investigator Channel, the tidal currents set ENE on the rising tide and WSW on the falling tide, with rates of 0.5 knot at springs.

Depths—Limitations.—Forrest Passage and the approaches to Forrest Strait from the N are deep and clear. The W channel leading through Forrest Strait has a least depth of 11.9m; the E channel has a least depth of 8.5m. The outer islands along this coast are fairly steep-to on their seaward sides.

Directions.—Vessels without local knowledge should proceed with caution because there are few navigational aids, none of which are lighted. The W channel should be used because of the deep water within 1 mile of the Gregory Islands and the landmarks available for position fixing.

From a position about 2 miles SW of High Island, a course of 152˚ should be steered until the S end of the S Dolphin Island bears 270˚, distant 4 miles. The latter position can also be reached by steering a course of 195˚ from a position 2.3 miles E of High Island. Course should then be altered to 180˚ and maintained until **Bold Promontory** (11˚44'N., 98˚18'E.) bears 270˚, distant 1.5 miles. A course of 186˚ should then be steered until Pulau Tuhan bears 090˚, distant 2 miles. Course should then be altered to 165˚ for a position about 2 miles E of the Five Islands.

Vessels using the E channel should from a position about 2 miles SW of High Island, steer a course of 152˚ until Shitpwin Kyun bears 045˚. Course should then be altered to about 172˚, which leads in mid-channel over a least depth of 8.2m. When Karachi Rock Beacon bears 270˚, distant 1 mile, course should

Table of Contents

be altered to 181˚ which leads to a position about 2 miles E of the Five Islands.

From the junction of the two channels, at a position 2 miles E of the Five Islands, a course of 193˚ should be steered in order to clear the extensive sand and mudflat which lies off the Pakchan River entrance.

Vessels bound for the Pakchan River entrance from the junction point should steer for a position 4 miles W of Pulo Mah Puteh and then follow the directions for the Pakchan River.

Forrest Strait—North Entrance

8.75 The N entrance of Forrest Strait lies between the N end of Sullivan Island and Collies Island, about 15.5 miles to the E. High Island, which lies about in the middle of the N entrance, rises to a double peak, about 428m high. A drying rocky ledge extends about 0.2 mile from the SE side of the island. A cove lies NW of this ledge.

Anchorage can be taken, in a depth of 22m, close off this cove.

Collies Island is the northernmost island of many which form the E side of the N portion of Forrest Strait.

North Part of Forrest Strait—West Side

8.76 **Two Hill Island** (10˚59'N., 98˚12'E.), 143m high, and Pulo Gaban, 120m high, lie close E of the N end of Sullivan Island. The islands are steep-to except for a rock awash, about 0.3 mile NNW of Pulo Gaban.

The E coast of Sullivan Island forms the W side of the N part of Forrest Strait and rises steeply to form a thickly wooded range of hills about 309m high. East Peak, the highest summit, rises to a height of 462m about 12 miles SSE of the N end of the island.

Dolphin Islands (10˚55'N., 98˚15'E.), a densely-wooded group of three, lie between 3 and 5.5 miles SSE of Pulo Gaban. The S islet is the highest. Small vessels can anchor in the channel between these islets and Sullivan Island.

Katyang (10˚51'N., 98˚16'E.), a small islet 68m high, lies close offshore about 2 miles S of the Dolphin Islands.

Half Moon Reef (10˚50'N., 98˚18'E.), which dries 0.3m, lies 1.5 miles offshore about 2.5 miles SE of Katyang. A similar reef, which also dries 0.3m, lies 1.3 miles NW. The summit of Pulo Gaban, open NE of the N Dolphin Island and bearing about 030˚, leads E of Half Moon Reef. Bold Promontory, open E of The Foreland and bearing 190˚, also leads E of Half Moon Reef.

The Foreland (10˚47'N., 98˚18'E.), a projecting headland 13.6m high, is the E extremity of Sullivan Island and is more prominent than Bold Promontory, about 2.3 miles farther S.

Marble Island (10˚45'N., 98˚18'E.), 8.3m high with an islet off its W side, lies 1 mile SSW of The Foreland.

Ramsom Shoal (10˚42'N., 98˚19'E.), a coral patch with a least depth of 7.3m, lies about 2.5 miles S of Bold Promontory.

Pulo Nalo, 235m high, and Pulo Kugyi, 34m high, lie within 4.5 miles S of the S end of Sullivan Island. Several islets lie between them.

Steep Shoal (10˚38'N., 98˚17'E.), a rocky patch with a least depth of 1.5m, lies about 1.3 miles E of the N end of Pulo Kugyi. The Foreland, open E of Bold Promontory and bearing about 360˚, leads E of Steep Shoal.

North Part of Forrest Strait—East Side

8.77 **Collies Island** (10˚59'N., 98˚27'E.), Riou Island, Mingyi Sakan, and Sir Campbell Island, together with the mainland coast to the S, form the E side of Forrest Strait.

Shitpwin Kyun (10˚49'N., 98˚26'E.), 27m high, lies 7.5 miles E of Half Moon Reef and is the N islet of several which lie on the coastal bank on the E side of Forrest Strait. A 4.3m beacon, with a white ball topmark, marks a rock awash about 0.3 mile N of Shitpwin Kyun.

Campbell Reef (10˚47'N., 98˚26'E.), flat and rocky, dries about 24m and is marked at its SW end by a beacon which stands 3.5 miles S of Shitpwin Kyun.

Pinwun Maw (10˚45'N., 98˚28'E.), which lies about 3 miles ESE of the beacon on Campbell Reef, is the NW point of the mainland which forms the E side of Forrest Strait. The coast then extends 7.5 miles S to Tutthabo Maw. These two points and Kyakyke Maw, about midway between them, are the only prominent features along this low stretch of coast which rises some distance inland to high peaks about 670m high.

Kala Taung (10˚40'N., 98˚29'E.), 1.3 miles SE of Kyakyke Maw, rises to a height of 235m and is the highest hill near the coast. A smaller hill lies 1.5 miles S of Kala Taung.

Forrest Strait—Mid-channel Dangers

8.78 **Jefford Shoal** (10˚48'N., 98˚21'E.), a steep-to detached 9.1m patch, lies in mid-channel about 4.5 miles WSW of Shitpwin Kyun.

A shoal, with a depth of 13.7m, lies about 3.5 miles E of The Foreland.

Gregory Group (10˚40'N., 98˚21'E.) consists of five low wooded islands, which lie in mid-channel, abreast the S end of Sullivan Island.

Leik-u Kyun, small, wooded, and 33m high, is the N island of the group. Shoals extend 1.5 miles N from the island and terminate in Marble Patch, which has a least depth of 1.8m, sand and shells.

Wa Kyun, Pulo Myang, and Pulo Myang Basa lie within 3.5 miles S of the above island. Extensive reefs fringe these islands.

Myang Shoal (10˚39'N., 98˚20'E.), with a least depth of 11m, lies 1.3 miles WSW of Pulo Myang.

Karachi Rock (10˚37'N., 98˚23'E.), which dries, lies 1.5 miles SE of Pulo Myang Basa. A beacon, with a white ball topmark, marks this danger.

Pulo Tuhan, the S island of the group, lies 2 miles S of Pulo Myang Basa. The intervening channel has a least depth of 14.6m. A shoal ridge extends about 0.5 mile SW from Pulo Tuhan.

South Part of Forrest Strait—West Side

8.79 **Pulo Hayat** (10˚35'N., 98˚14'E.) and Saucer Island lie close together about 2 miles SSW of Pulo Kugyi. Pulo Balu, a high island, lies 1 mile farther SSW. A drying reef extends about 0.3 mile N from Pulo Hayat.

Pulo Bada (10˚30'N., 98˚13'E.), 250m high near its S end, lies 1 mile SSW of Pulo Balu. A shoal, with a least depth of 7m, lies about 3.5 miles E of the NE point of Pulo Bada.

Pocock Island and five islets lie on an unexamined area which extends up to 4.5 miles S and SW from the S side of Pulo Bada. Foul ground extends S from S islet.

Bowen Shoal (10˚29'N., 98˚15'E.), a sand and coral patch which dries 0.6m, lies about 1 mile E of the SE end of Pulo Bada. A shoal ridge, with a least depth of 0.3m, lies between 1 and 2 miles N of Bowen Shoal.

A chain of islands and islets lies between Pulo Bada and Pine Tree Island, about 9.5 miles SSE. These include Potter Island, Saddle Island, Naked Islet, Bare Islet, the Ninepins Islands, and Cat and Kitten Island; Northwest Hump Island lies 4 miles W of the latter island. These islands should be approached with caution, because of the irregular depths and rocky bottom.

A reef, marked by several drying rocks, extends 1.3 miles N from the N coast of Pine Tree Island.

Southeast Hump Island (10˚16'N., 98˚19'E.), 97m high, lies 4.5 miles SSE of Pine Tree Island. A dangerous rock, awash, lies 0.8 mile SSE of the summit of this island.

Five Islands (10˚17'N., 98˚22'E.), a small group of rocky islets, extend about 1.5 miles N from a position 2 miles E of Southeast Hump Island. The N islet rises to a height of 49m and is the most prominent. A rock that dries 1.5m lies almost 0.3 mile NW of the N islet.

8.80 **Russell Island** (10˚15'N., 98˚15'E.), tree covered, lies 5 miles SSW of Pine Tree Island and has a well-defined summit, 267m high. Two detached rocks lie 0.5 mile W and NW, respectively, of the S end of Russell Island.

Two Tree Island (10˚16'N., 98˚14'E.), grass covered and 67m high, lies close N of the NW point of Russell Island. The SW point of the island is reef fringed.

Little Russell Island (10˚13'N., 98˚15'E.), tree covered and 76m high, lies close S of Russell Island. A rocky islet lies close off the SW side of Little Russell Island. The passage between the two islands is 0.5 mile, wide and deep.

Currents in the vicinity of Little Russell Island are variable in strength and direction and numerous eddies exist. Vessels should give the rocky islet close SW of this island a wide berth.

North Phipps Island (10˚10'N., 98˚17'E.), topped by a prominent summit 110m high, lies 3.3 miles SSE of Little Russell Island.

South Hump Island (10˚11'N., 98˚20'E.), of moderate elevation and grass covered, lies 5.5 miles ESE of Little Russell Island. Helmet Island, also moderately high and tree covered, lies 7 miles ESE of the same island. Foul ground extends up to 183m offshore around this latter island.

St. Lukes Island (10˚09'N., 98˚12'E.) rises to a prominent summit 484m high and lies 2 miles W of North Phipps Island. The 2-mile wide channel, between Little Russell Island and the W end of St. Lukes Island, is clear of dangers in the fairway.

Care should be taken to avoid a 9.8m rocky patch about 1.3 miles ENE of the NW extremity of St. Lukes Island.

South Phipps Island, 155m high, Barwell Island, and Horseshoe Island, lie between 2 and 4 miles SSW of Helmet Island and close off the NE and E coasts of Hastings Island. A channel, about 183m wide with a depth of 5.2m, leads between South Phipps Island and Barwell Island.

Most of the islands mentioned above, with the exception of South Hump Island and those forming Hastings Harbor, are tree-covered. They usually have well-defined peaks, especially South Hump Island and the N summit of Hastings Island, which is 267m high.

East Side of Forrest Strait—South Part

8.81 Between **Tutthabo Maw** (10˚37'N., 98˚27'E.) and an unnamed point about 26 miles S, the E side of the strait is indented by a number of shallow creeks. Pulo Mah Puteh, 81m high, lies close off the unnamed point.

The **Turrets Islands** (10˚31'N., 98˚27'E.) lie close together about 6 miles S of Tutthabo Maw and about 2.5 miles offshore. Pulau Salangin, the middle and largest island of the group, is a bold, precipitous rock, 104m high. In clear weather it resembles a square block of marble. Pulo Beba lies close N and Pulo Prewang lies about 0.5 mile S of Pulau Salangin. A 4.9m shoal lies almost 0.8 mile SSW of Pulo Prewang.

An islet, 17m high, lies about 1.8 miles SSE of Pulo Prewang.

Whaleback Rock (10˚28'N., 98˚27'E.), 0.9m high, lies about 2.5 miles S of Pulo Prewang and 4 miles offshore.

Canister Island, 87m high, lies 8.5 miles S of Pulo Prewang and 4 miles offshore.

Between Pulo Mah Puteh and Victoria Point, the N entrance point of the Pakchan River, about 14 miles SSE, the coast is fronted by an extensive shoal bank as defined by the 6m curve. This bank extends in a general SSW direction from Pulo Mah Puteh to a position about 11 miles W of Victoria Point. Numerous patches, with depths of 1.8m and less, lie on this bank.

Anchorage.—Vessels can anchor, in depths of 12.8 to 14.6m, E of **Pulo Gaban** (10˚58'N., 98˚13'E.) and SSW of High Island in the positions indicated on the chart.

Anchorage can be taken, in a depth of 18.3m, off the NE side of Pine Tree Island with the summit of that island bearing 231˚, distant 0.6 mile. Care should be taken to avoid the reef extending 1.3 miles N from the N coast of the island.

Anchorage can be taken on the E side of the strait between High Island and the Turrets Islands, in depths of 9.1 to 11m, soft mud.

Outer Islands and Banks West of Forrest Strait

8.82 **North Twin Island** (10˚38'N., 97˚42'E.), 137m high, lies about 16 miles SW of Clara Island. The W side of North Twin Island is bare to a height of 30m; its N and E sides are densely wooded.

South Twin Island (10˚28'N., 98˚41'E.), 82m high, lies 9.3 miles S of North Twin Island. It's W side is almost bare and its summit consists of bare rock. The N and S sides of the island are indented by open bays. Two rocks lie close off the NW point of the island. A sunken rock lies close NE of the E end of the island.

A number of isolated shoals and banks have been reported to exist in the W approach to **Investigator Channel** (10˚15'N., 97˚56'E.), between the 185m curve and a position about 90

miles WSW of Cavern Island. They have reported depths of 9.1 to 87.8m, but these depths have not been closely examined.

Heckford Bank (10˚20'N., 97˚10'E.), the NE bank, has a depth of 12.8m and lies about 48 miles W of Cavern Island. Coral Bank, about 49 miles WSW of the same island, has a least depth of 20m.

A 9.1m patch was reported to exist in position 10˚03'N, 97˚03'E. Depths of less than 11m were reported to exist in position 10˚08'N, 96˚48'E.

Roe Bank (10˚08'N., 96˚38'E.), of sand and coral with a least depth of 11.6m, is about 0.4 mile wide between the 20m curves. A depth of 18.3 was reported to lie E of Roe Bank in position 10˚08'N, 96˚50'E. A shoal, with a depth of 14m, lies about 8 miles S of Roe Bank.

Forrest Strait—Islands and Dangers West and Southwest

8.83 The **Great Swinton Islands** (10˚34'N., 98˚03'E.) lie about 15 miles ESE of North Twin Island. Numerous small islets lie between Wa-ale Kyun and the W end of Kyun Pila, about 18 miles SSW. Pulau Tika, 91.1m high, lies about 3 miles SSW of the S end of Wa-ale Kyun.

Brown Island (10˚45'N., 98˚03'E.), 30m high, and Pulau Tajam, 47m high, lie 2 and 5.8 miles SSW, respectively, of Pula Tika. An unnamed islet, with a sunken rock close W of it, lies 5.5 miles SW of Pulau Tajam.

Kyun Pila (10˚34'N., 98˚00'E.), the largest island of the group, lies with its N point about 3 miles SE of the unnamed island. A group of white rocks, 3m high, lie about 0.8 mile SSE of the E end of Kyun Pila.

Pulo Set (10˚34'N., 98˚06'E.), 207m high and the E of the group, lies 3.5 miles E of Kyun Pila. A rocky islet, surrounded by sunken rocks, lies 1.5 miles SW of Pulo Set. A rocky islet, surrounded by sunken rocks, lies 3.3 miles SSE of the same island.

Lord Loughborough Island (10˚27'N., 97˚55'E.) lies about 3.8 miles SW of Kyun Pila. The Paps, which rise to a height of 439m, are the most prominent of several peaks on the island. The W coast of the island is bold, steep-to, and densely wooded.

Loughborough Passage (10˚30'N., 97˚57'E.) lies between Kyun Pila and Lord Loughborough Island. A rock, with a depth of 3.7m, lies in the middle of the passage about 1.5 miles SSW of the W end of Kyun Pila. Pollock Reef, with a rock 15.2m high near its SW end, and another rock 3.7m high near its NE end, lies at the E and of the passage. An islet, 24m high, lies near the middle of the reef.

Vessels are advised not to use Loughborough Passage.

Hayward Island (10˚27'N., 97˚57'E.), with sunken rocks extending 0.5 mile NE from it, lies 0.5 mile NE of the E end of Lord Loughborough Island. Richards Island lies 0.8 mile SE of the same point. Anchorage can be taken, in depths of 14.6 to 27.4m, between Richards Island and Lord Loughborough Island. An unnamed island, with several unexamined dangers S of it, lies in the S entrance of this anchorage.

O'Connor Island, Saul Island, and Skinner Island lie close together between 1 and 2 miles NE of Richards Island. Off-lying rocks are reported to lie in their vicinity. Vessels should keep closer to Richards Island in passing between that island and the above islands.

8.84 Investigator Channel (10˚15'N., 97˚56'E.) lies between McCarthy Island, Steward Island, and Cavern Island to the N and the St. Andrew's Group to the S. The channel is about 6 miles wide and has depths in excess of 36.6m. Vessels from the W bound for Hastings Harbor or the Pakchan River use this channel.

Cavern Island (10˚20'N., 98˚00'E.), which lies about 5 miles SE of Lord Loughborough Island, is the largest of several islands which lie to SE of that island. McCarthy Island, 213m high, and Steward Island, 154m high, lie between the above islands. Prominent Rocks lie off the S ends of all three of these islands.

Quoin Island (10˚21'N., 98˚04'E.), 114m high, lies 4 miles E of Cavern Island. High Rock, 20m high, lies close S of Quoin Island.

St. Andrew's Group (10˚10'N., 97˚55'E.) on the S side of Investigator Channel, consists of a number of densely-wooded islands and rocks.

Horsburgh Island (10˚12'N., 97˚53'E.), the W of the group, lies 9.5 miles SW of Cavern Island and rises to a height of 76m. Horsburgh Islet, 71m high, lies close SSE of Horsburgh Island. Boulder Rock, 7.6m high, lies 0.8 mile SW of the same island.

The **Cockburn Islands** (10˚12'N., 97˚59'E.), four in number, lie 5 miles E of Horsburgh Island. The highest island rises to an elevation of 163m. Mackay Island, 3.8 miles SE, and Macleod Island lie 5.8 miles SSE of Horsburgh Island.

Parsons Island, 277m high, lies 3 miles E of the Cockburn Islands. Several islets and rocks lie close S and E of this island. Parsons Rock, a compact group of pinnacles which dry about 1.8m, lies 1.8 miles NNW of the N end of Parsons Island.

Mackenzie Island (10˚04'N., 97˚59'E.), MacIan Island, and MacNab Island, lie between 3 and 6 miles S of the main body of the St. Andrew's Group.

St. Pauls Island (10˚09'N., 98˚09'E.), about 5.5 miles E of Parsons Island and close W of the N part of St. Lukes Island, has a prominent horn-shaped peak, 224m high. The channel separating the two islands has a depth of 6.4m over the bar at its N end.

St. Pauls Island has been reported to be a good radar target up to 20 miles.

The W side of St. Pauls Island is foul. Several rocks and islets lie off this side and off the N side of the island.

Anchorage can be taken, in a depth of 7.3m, near the head of a bay on the N side of the island. Protection is provided during the Southwest Monsoon.

Za Det Gyi Island and Hastings Harbor

8.85 Za Det Gyi Island (Big Top Island) (9˚58'N., 98˚13'E.) lies S of Za Det Nge Island (Small Top Island) and is hilly and densely wooded. Its N side forms the S shore of Hastings Harbor. Highest Peak, 864m high, lies near the middle of the island; South Peak, 585m high, lies near the S end of the island; both peaks are well-defined. Middle Peak, 744m high and prominent, lies between the above peaks.

The N and NE coasts of the island are indented by a number of foul coves. Fish Harbor, near the NE extremity, provides anchorage for small vessels with local knowledge and a draft of 2.7m or less. White Rock, 9.1m high and prominent, lies 0.5

mile E of the harbor entrance. A 4m shoal lies close SE of the rock.

A rock, which dries 1.5m, lies about 1.3 miles SSW of the NE end of the island.

The SE coast of Za Det Gyi Island is densely wooded. Foul ground extends up to 1 mile offshore in places.

Tongue Island (9˚55'N., 98˚14'E.), 113m high, steep-to and densely wooded, lies 2.5 miles SE of Highest Peak. A bare grassy mound lies near its S end.

South Bay, a bight in the S end of Za Det Gyi Island, provides sheltered anchorage, in a depth of 18.3m, sand and shells. A 7.9m shoal lies in the E part of the entrance and on the E side of the bay.

8.86 **Hastings Harbor** (10˚06'N., 98˚18'E.) is bordered by St. Lukes Island to the W, Za Det Nge Island to the E, and Za Det Gyi Island to the S. There are two navigable entrances.

The N entrance lies between the NE end of St. Lukes Island and the NW end of Za Det Nge Island about 2.3 miles SE. Haycock Island, 100m high and jungle-covered, lies 0.5 mile SE of Bengal Point, the NE end of St. Lukes Island. The main channel passes between Haycock Island and Minto Point, about 1.5 miles SE. The main fairway has depths of 20.1 to 27.4m. Thomas Shoal, with a least depth of 2.1m, lies about in mid-channel 0.6 mile NW of Minto Point. Elsewhere the channel is clear of dangers. This shoal can be passed on either side, but there is a submerged rock off Minto Point.

The E entrance lies between Cornwallis Point, the S end of Za Det Nge Island, and Dufferin Point, the N end of Za Det Gyi Island, about 1.3 miles SSW. This entrance has depths of 11 to 18.3m in the fairway.

Chaves Shoal (10˚04'N., 98˚17'E.), a detached patch with a least depth of 5.2m, lies on the S side of the entrance about 0.8 mile SSW of Cornwallis Point. Depths of 12.8m surround this shoal.

James Patch (10˚05'N., 98˚19'E.), with a least depth of 0.6m, lies on the N side of the entrance almost 1 mile ESE of the above point.

The W entrance lies between St. Lukes Island and Za Det Gyi Island, but is not navigable except by small craft and boats.

St. Marks Islet (10˚03'N., 98˚13'E.), 175m high, lies in a shallow bight in the SW part of the harbor.

Ryland Patch (10˚04'N., 98˚13'E.), a small coral rock that dries 0.3m, lies about 1 mile N of St. Marks Islet.

St. Johns Islet, 122m high, lies off the NE side of Hindustan Bay, about 3 miles S of Bengal Point.

The reefs which fringe the shores of the harbor are quite distinct and rise sharply from depths of 5.5 to 9.1m.

Tides—Currents.—Between **South Hump Island** (10˚11'N., 98˚20'E.) and Za Det Nge Island, the tidal current sets E on the flood and W on the ebb at a rate of 1.5 knots at springs. The currents are weak within Hastings Harbor.

Anchorage.—Hastings Harbor provides excellent protected anchorage for all classes of vessels, in depths ranging from 11 to 22m, mud. A lee is always obtainable and no sea or current of any consequence is experienced. Anchorage can be anywhere according to draft, with very good holding ground.

Caution.—Patches of discolored water frequently appear in the harbor, but examination has proven that they do not indicate dangers. The W entrance channel is often muddy, making it difficult to make out any dangers.

Aladdin Islands to Birds Nest Rock

8.87 The **Aladdin Islands** (9˚43'N., 98˚03'E.), a well-scattered group of islands, some of which are high and bold, extend about 15 miles W and 18 miles SSW of the S end of Za Det Gyi Island.

Western Rocky Island (9˚51'N., 97˚52'E.), the westernmost of the group, is 21m high. A 10.7m rock lies close NE of this island.

North Rocky Island (9˚53'N., 97˚58'E.), 15m high and scrub-covered, lies 5.8 miles ENE of the above island and is surrounded by off-lying rocks.

Davis Island (9˚49'N., 98˚02'E.), the largest and highest of the group, lies 4 miles WSW of the S end of Za Det Gyi Island. This densely-wooded island has two main peaks each about 454m high with the W peak being slightly higher. A rock, 5.5m high and surrounded by a reef, lies close off the E end of Davis Island.

Chimney Island (9˚51'N., 98˚03'E.), 43m high, lies 1.3 miles NNW of the NE end of Davis Island. Several rocks lie between the two islands. The N rock dries 0.9m.

Drake Island (9˚46'N., 98˚01'E.), 143m high, lies 0.8 mile S of Davis Island. The channel between islands is deep.

Glasshouse Island (9˚45'N., 97˚59'E.), 137m high, bold, and rocky, lies 1.8 miles WSW of Drake Island. A 52m high rock lies close off the W end of Glasshouse Island.

Slave Island (9˚43'N., 98˚00'E.), 64m high, lies 2 miles S of Glasshouse Island. A chain of rocks extends 1.5 miles NNE from Slave Island. Pat Rock, the S rock, is 38m high, and Sheila Rock, the N rock of the chain, is 61m high. A rocky reef, about 0.6m high, lies 1 mile S of Slave Island.

Lamp Island (9˚43'N., 98˚01'E.), about 2.5 miles S of Drake Island, is 97m high. Honor Rock, with a depth of 0.6m, lies about midway between the two islands. North Brother and South Brother, two large rocks, 46 and 59m high, respectively, lie about 0.5 mile S of Lamp Island. Kai Koh, a rock which dries 0.9m, lies 0.2 mile S of South Brother.

Haycock Rock (9˚41'N., 97˚55'E.), high and steep-to, lies 5.5 miles WSW of Slave Island.

Christie Island (9˚38'N., 97˚58'E.), the furthest S of the main Aladdin Islands, lies 4 miles SE of Haycock Rock and has several wooded peaks. The highest peak rises to an elevation of 325m at the NW end of the island.

Sanders Island (9˚37'N., 97˚59'E.), 106.7m high, lies 0.8 mile E of the S end of Christie Island. Murray Island, 71m high, lies 0.5 mile SSW of the same point. Both islands are rocky. A rock, 5.5m high, lies close off the N point of Murray Island. The passage between this island and Christie Island is foul.

8.88 **Cash Island** (9˚49'N., 98˚07'E.), 113m high, lies 0.8 mile S of the SW end of Za Det Gyi Island. Mawken Passage, the channel between the two islands, has considerable depths and provides a short cut for vessels proceeding W from the Pakchan River. Rocks lie in the passage within 0.3 mile of the SW end of Za Det Gyi Island. The S rock is 6.1m high. A rocky islet, 36m high, lies 0.3 mile E of Cash Island; a similar

islet, 43m high, lies about 0.5 mile S of Cash Island. There are strong rips in the passage at springs. The passage should only be used during daylight hours and then only under favorable conditions.

Dunkin Island (9˚47'N., 98˚07'E.) rises to a height of 238m near its N end. The Sisters, two small rocks of almost equal height, lie 0.5 mile S of Dunkin Island. Bruer Island, 292m high and densely wooded near its SE end, lies 3 miles S of the same island. A rock, having a depth of less than 1.8m, the position of which is approximate, lies about 1 mile SSW of the S end of Bruer Island.

Auriol Island, densely wooded and 183m high at its W end, lies about 2.5 miles S of Bruer Island. A low rock lies close off the NW side of Auriol Island. Swallow Island, about 0.5 mile N of Auriol Island, rises to a height of 88m. The intervening channel is shoal.

Graham Island (9˚39'N., 98˚02'E.), 164m high, lies 2 miles W of Auriol Island. Two prominent high rocks lie close N of the N end of Graham Island. Ninepin Rock, 24m high, lies about 0.5 mile SSE of the S end of Graham Island.

A 5.5m shoal, the position of which is doubtful, lies about 5.5 miles SE of Auriol Island.

Birds Nest Rocks (9˚47'N., 98˚11'E.) consist of two groups of rocks which lie within 5 miles SSE and 4.5 miles E of the SE end of Za Det Gyi Island. The principal rocks in the N group are Horse Shoe Island, 119m high, Cupola Island, 212m high, Tower Rock, 143m high, and Square Rock, 82m high, and Sloap Rock, 88m high. The latter rock is the furthest N of this group.

The principal rocks in the S group are Spur Rock, 149m high, about 2.3 miles SW of Horse Shoe Island, and Cocks Comb Island, about 0.5 mile farther SW. This latter island rises to a height of 76m. An islet, 76m high, lies close S of Cocks Comb Island.

Ko Chan (Koh Sindarar) and Adjacent Islands

8.89 **Ko Chan** (9˚25'N., 97˚52'E.), consisting of Koh Sindarar Nua and Koh Sindarar Tal, lies about 10 miles SW of Christie Island. A winding channel, which nearly dries, separates the two islands. From a distance, both islands appear as one high and densely wooded island. A high prominent summit lies near the N end of the S island and rises to a height of 366m.

Torilla Island (9˚22'N., 97˚52'E.), 117m high, lies off the S side of the S island. Pachumba Island, 163m high, lies off the W side of the same island. Stork Island, 97m high, lies about 1.8 miles NE of the N island.

A rocky islet, 13m high, lies about 1 mile NE of the SE end of the S island. Some 0.6m rocks lie close W of the islet. The group is separated from the S island by a 0.5 mile wide deep channel.

A rocky islet, 14m high and steep-to, lies 0.8 mile NW of the N end of the N island. A 9.1m islet lies about the same distance N of the same point.

A 14.6m bank was reported to lie about 1 mile N of Pachumba Island.

Marshall Rock (9˚23'N., 97˚49'E.), a pinnacle with a depth of 4.5m surrounded by depths of 36.6m, lies about 2.8 miles W of the S point of the S island.

Richelieu Rock (9˚21'N., 98˚02'E.), a small, coral pinnacle which dries 1.2m, lies about 10 miles E of Torilla Island. The drying part of the rock is about 9.1m wide. The sea does not always break over this danger at HW, even with a considerable swell.

A depth of 40.2m, rock, was reported to lie about 6 miles WSW of Richelieu Rock.

Anchorage can be taken in the bay formed by the E sides of the two islands, well protected from W winds.

Pulo Mah Puteh to Casuarina Point—The Pakchan River and Approaches

8.90 **Victoria Point** (9˚58'N., 98˚33'E.), the N point of the entrance of the Pakchan River, forms the S end of a range of hills. The point is high, bold, and steep-to. An iron flagstaff, 23m high and with an elevation of 57m, lies on the point. Two radio masts, with elevations of 117m, stand near the coast about 0.9 mile N of the flagstaff. A triangular wooden daymark is secured to the NW radio mast.

The land N of Victoria Point is very hilly and partly cleared. The summits of the hills in the vicinity are flat-topped and not easily identified.

The coast between Victoria Point and Pulo Mah Puteh, about 14 miles NNW, is mostly low and bordered in places by mangroves. Tanjong Padah, a bluff headland lies about 7.5 miles N of Victoria Point and a similar headland, lies about 5 miles N of the same point.

The Pakchan River rises in about position 10˚50'N, 99˚00'E. and is about 80 miles long; it forms the boundary between Burma and Thailand. Both of its banks are densely wooded and numerous streams discharge into it. Access is provided to the river outlets of many of the tin mines in the S part of Burma and the N part of Thailand.

The coast S of the river entrance, between Seaward Peak and Casuarina Point, about 38 miles SSW, is generally low, densely wooded, and intersected by numerous creeks and rivers. **Seaward Peak** (9˚49'N., 98˚32'E.) rises to a prominent summit 401m high, about 9 miles S of Victoria Point. Double Peak, 945m high and prominent when visible, lies 6 miles ESE of Seaward Peak.

A range of mountains backs this section of coast about 10 miles inland. **Round Mountain** (9˚41'N., 98˚37'E.) rises to a conspicuous 970m high peak, about 9.3 miles SSE of Seaward Peak. This mountain has a very distinct conical summit, with a peak of almost perpendicular appearance. **Kao Phrami** (9˚18'N., 98˚28'E.), about 5.8 miles ENE of Casuarina Point, is topped by three peaks each about 1,097m high.

The coast between the S entrance of the Pakchan River and the mouth of the Banlin River, about 9.5 miles SSW, is fronted by mangroves and bordered by extensive banks of sand and mud.

Tides—Currents.—The tidal currents near the coast, S of Pulo Mah Puteh, set S on the rising tide and N on the falling tide. In the N approach channel, the tidal currents set in a direction parallel with the channel at a rate of 2 knots at springs.

Between Ko Chan and Koh Chang, the tidal currents set NE on the rising tide and SW during the falling tide. The rate is 0.8

knot at springs. Between the latter island and the mainland, the tidal currents set N on the rising tide and S on the falling tide.

In the S approach channel, the tidal currents set parallel with the channel, toward the Pakchan River entrance on the rising tide and in the opposite direction on the falling tide. Strong rips are found between the N end of Koh Chang and Ko Kan. Both the flood and ebb currents set strongly towards Ko Kan. The flood current sets E past the N coast of Pulo Ru, and then turns NE towards the entrance of the river. The ebb current from the Pakchan River divides at the NE point of Pulo Ru, one part setting W and the other setting S. Tide rips are found in the channel N of Pulo Ru.

Depths—Limitations.—The 11m curve lies about 2.5 miles W of Pulo Mah Puteh and up to 12.5 miles W and WSW of Victoria Point. Farther S, this curve is not clearly defined off Casuarina Point.

The least depths in the N, W, and S approach channels to the Pakchan River entrance are 3.4m, 5.8m, and 7.3m, respectively. The depths at the anchorage in Victoria Point Harbor, close N of that point, are 12.8 to 14.6m. Depths of about 4.6m exist off the entrance of Ranong Creek at the recommended anchorage.

Vessels, with a draft of 3.7 to 4m, can proceed about 14 miles upriver to the entrance of the Klong Maliwun River and then 3 miles up that river.

The Pakchan River—Islands and Dangers in the North Approach

8.91 Several islands lie on the extensive bank which fronts the coast between Pulo Mah Puteh and Victoria Point.

Pulo Remiah (10˚05'N., 98˚30'E.), the furthest north of these islands, is 18.3m high and lies 0.8 mile S of Tanjong Padeh. A group of islands, islets, and reefs lie between 10 miles NW and 12 miles W of Victoria Point.

Sims Reef (10˚02'N., 98˚29'E.), which dries 2.7m, lies about 5.3 miles NW of Victoria Point. A beacon with a ball topmark marks this danger.

Thane Island (10˚02'N., 98˚30'E.), small and 30m high, lies about 0.3 mile E of Sims Reef. A small drying reef lies close S of the island.

Pulo Tonton (10˚01'N., 98˚30'E.), 123m high and partially cleared, lies 4 miles NW of Victoria Point. Some villages lie on its E and W coasts. A drying bank extends E to the mainland and SE almost to Victoria Point.

Pulo Besin (9˚59'N., 98˚29'E.), 106m high, lies about 1 mile SSW of the S end of Pulo Tonton. Several drying reefs lie close off the E side of Pulo Besin. A beacon, with a globe topmark, stands on one of these reefs. A 4m patch lies N of the NE end of the island.

Akha Barit, 65m high and steep-to, lies about 0.5 mile N of the above point.

Pulo Jungis (10˚00'N., 98˚29'E.),183m high, lies 0.4 mile N of Pulo Besin. The narrow channel between the islands dries.

A shoal, with depths of less than 1.8m, lies between 2 and 5 miles WNW of Pulo Jungis.

Pulo Perlin (9˚58'N., 98˚30'E.) 137m high, lies about 0.4 mile S of the SE end of Pulo Besin. Two small drying reefs lie within 1 mile S of Pulo Perlin. A white beacon marks the N reef of the two. A light shows from the SE point of Pulau Perlin.

A drying reef lies at the E end of a shoal about 0.9 mile S of Pulo Perlin. The shoal extends about 4 miles to the WSW. A rock, with a depth of 0.6m, lies in the middle of the shoal.

A white beacon stands close off the SE side of Pulo Perlin.

The Pakchan River—Islands and Dangers in the South Approach

8.92 Shoal ground, as defined by the 6m curve, extends up to 6 miles offshore between a 183m high headland about 10.5 miles NNE of Casuarina Point, and a point about 15 miles NNE. A tongue of this shoal extends as far as the E side of Ko Kam Yai.

Ko Nui, a small islet 60m high, lies about 0.5 mile W of the above headland. Shoal ground extends about 4 miles WSW.

Ko Kam Yai (9˚29'N., 98˚21'E.), 314m high, lies about 13 miles N of Casuarina Point. Shoal ground, as defined by the 11m curve, extends about 2 miles off the W side of the island. An extensive sandbank lies about 0.5 mile E of the S end of the island. Ko Kam Tok, 105m high, lies close N of Ko Kam Yai. Ko Kam Nui, 288m high, lies 1 mile E of the same island. The depths between the islands are very irregular and no attempt should be made to pass between them.

Double Islet (9˚27'N., 98˚20'E.), located about 1 mile S of Ko Kam Yai, rises to two peaks joined by a low, narrow strip of sand. The N peak is 83m high and the S peak is 44.5m high. A rock, with a depth of less than 1.8m, lies about 0.2 mile NE of the N peak. South Rock, 12m high, lies 0.5 mile SW of Double Islet.

Metcalfe Island (9˚26'N., 98˚21'E.), 22m high and wooded, lies miles SSE of Ko Kam Yai. A sandy spit extends about 1.3 miles ENE from Metcalfe Island.

Hayes Island (9˚20'N., 98˚20'E.), circular in shape, high, and wooded, lies 6 miles SSW of Metcalfe Island.

Umbrella Island (9˚20'N., 98˚19'E.), located about 0.8 mile NW of Hayes Island, is rocky and shows up well when not in range with the latter island. A high, umbrella-shaped tree lies on the island. These islands are surrounded by large sandbanks and rocks which are marked by breakers at LW.

Koh Chong Pianam (9˚34'N., 98˚23'E.), about 4 miles NNE of Ko Kam Yai, is 157m high and wooded. The E side of the island is fringed by rocks which extend up to 183m offshore.

Hin Sawai, 6.4m high and topped by a white summit, lies 0.5 mile N of Koh Chong Pianam.

Koh Piam (9˚44'N., 98˚25'E.), densely wooded and topped by a prominent peak, lies about 15 miles SW of Victoria Point. The reef-fringed W side of the island is indented by two open bays. A rocky islet 15.2m high, lies about 0.3 mile off the SW point of Koh Piam. A drying rock lies about 0.5 mile SW of the island. Extensive sandbanks lie between the island and the mainland.

Koh Chang (9˚50'N., 98˚27'E.), densely wooded and 390m high, lies 2 miles NNE of Koh Piam. Some wooded islets lie off the S end of Koh Chang. Large sand banks lie between the island and the mainland.

A sand bank, having depths of less than 5.5m, extends 1.3 miles SW from the SW side of Koh Chang toward the N end of Koh Piam. Depths of 7.9 to 11m lie between this bank and the N end of Koh Piam. A 3.7m patch lies about 0.3 mile E of the N point of the latter island.

Harry Head (9˚52'N., 98˚27'E.), the N end of Koh Chang, is a high, tree-covered bluff. Tree Island, 13.7m high and wooded, lies 1.5 miles SW of Harry Head. A 0.6m high rock lies close off the W coast of Koh Chang about 1 miles S of Tree Island.

Ko Khan (9˚52'N., 98˚26'E.), a rocky islet lying about 0.5 mile NW of Harry Head, is steep-to on its E and S sides. The light structure on the islet is not easily distinguished by day because of the trees which obscure all but the top.

Several shoal patches, having a least depth of 0.9m, extend up to 2.5 miles WSW from Ko Khan.

The Pakchan River—Islands and Shoals

8.93 A group of islands and islets, surrounded by shoals and foul ground, lie between Koh Kan and Victoria Point.

Pulo Pingngwe (9˚54'N., 98˚29'E.), 184m high lies 1.8 miles NE of Koh Kan. A large drying shoal extends up to 1 mile ESE from the island. A shoal, with a least depth of 1.5m, lies 0.6 mile S of the S end of the island. Other shoal patches lie W of the island.

Pulo Saung Kharang (9˚55'N., 98˚31'E.), 132m high, lies 2 miles ENE of Pulo Pingngwe. Foul ground extends about 0.8 mile W from Pulo Saugn Kharang.

Dyke Island lies 0.5 mile S of Pulo Saung Kharang.

Pulo Ganga (9˚56'N., 98˚29'E.), 123m high, lies 1.5 miles N of Pulo Pingngwe, with Pulo Gattai about 2 miles E of it. A narrow drying spit lies between Pulo Ganga and Pulo Gattai and almost joins the two. A shoal, with a least depth of 1.2m, extends about 2.3 miles W from Pulo Ganga.

Pulo Ru (9˚57'N., 98˚32'E.), 186m high near its NW end, lies with its S end about 0.3 mile E of Pulo Gattai and its NE point about 1 mile S of Victoria Point. A shoal, as defined by the 5.5m curve, fronts the W side of Pulo Ru and extends 4.5 miles W from it. The inner part of this shoal dries.

Narrow channels separate the above islands.

Round Island (9˚55'N., 98˚3'E.), 88m high and steep-to, lies 0.8 mile SE of the S end of Pulo Ru. The intervening channel is fairly deep.

A shoal, with a least depth of 3.4m, lies on the S side of the entrance channel between the NE extremity of Pulo Ru and the S side of the river entrance.

The Pakchan River Entrance—Approach Channels

8.94 There are three approach channels leading to the Pakchan River entrance. The N channel leads between the shoal ground extending N from Pulo Jungis and Pulo Remiah. The least depth of 3.4m found in this channel lies SW of Pulo Remiah. The channel leads between Sims Reef and Thane Island and then between Akha Barit and the NE end of Pulo Besin.

The W channel leads between Pulo Perlin and the reef lying about 0.8 mile S of that island. The least depth of 5.8m to be found in this channel lies 4.5 miles WSW of the SW end of Pulo Besin.

Bell Passage, the S channel, leads between Koh Kan and the N end of Koh Chang and then E between the N coast of the latter island and the shoals extending S from Pulo Pingngwe. The channel then leads SE of the drying bank that extends SE from the latter island and then SE of Round Island. The least depth of 7.3m found in this channel lies about 0.8 mile SW of Koh Kan.

The Pakchan River entrance lies between Victoria Point and the entrance of Ranong Creek, about 2.5 miles to the ESE. The small Victoria Point Harbor, with the village of Kawsong at its head, lies on the E side of the point, between it and Browning Island, about 0.3 mile to the E.

Koh Phi, a small islet, lies on the E side of the Pakchan River entrance, about 2.3 miles ESE of Victoria Point. A sand bank, with depths of 0.9 to 3.4m, extends about 0.3 mile SSW from the islet.

Shoal ground, as defined by the 6m curve, extends about 0.2 mile WSW from the S end of Browning Island. Depths of 4 to 5.5m exist between the outer edge of this bank and Victoria Point.

Anchorage.—Vessels with local knowledge can anchor, in a depth of 10m, sand and mud, off a sandy beach in the bay that indents the SW coast of Koh Piam.

Vessels with local knowledge can anchor, in depths of 9.1 to 11m, off the NE side of Koh Piam. Protection is provided during the Southwest Monsoon.

Sheltered anchorage can be taken in the N approach channel between Pulo Jungis and Pulo Tonton.

Vessels with local knowledge can anchor in the S approach channel S of Pulo Pingngwe. Light-draft vessels can anchor E of Pulo Ru.

Small vessels with local knowledge frequently anchor, in a depth of 4.6m, off the entrance of Ranong Creek, about 0.3 mile S of Koh Phi.

Vessels can anchor 0.5 mile S of Victoria Point, in depths of 9.1 to 18.3m.

Vessels can anchor, in 12.8 to 14.6m, in Victoria Point Harbor. The anchorage area is about 0.3 mile long and 137m wide and lies E of the pier. Vessels using this anchorage pass over a shoal, having depths of 4 to 5.5m, that lies across the harbor entrance.

Directions.—Directions for each channel are, as follows:

1. **North Approach Channel.—**From a position 4 miles W of Pulo Mah Puteh, steer toward Thane Islet on a course of 149˚. Double Peak, in line with the E tangent of Thane Islet, makes an excellent mark for this course. Double Peak is seldom visible before noon.

When the beacon marking Sims Reef bears 185˚, alter course to 172˚ so as to pass between that reef and Thane Islet. When the N point of Akha Barit bears 090˚, alter course to 148˚ to avoid the 4m patch which lies SW of Akha Barit and the reefs off the E coast of Pulo Besin. Vessels can pass close off the steep-to SW coast of Akha Barit.

When the SE and SW points of Pulo Besin are in line bearing 261˚, alter course to 128˚. Maintain this course until Koh Phi light structure bears 095˚, and then steer that course which leads through the river entrance. When Victoria Point bears 045˚, course may be altered for the selected anchorage.

Vessels bound for the anchorage off Koh Phi should, after passing Victoria Point, approach that island from a more N direction in order to avoid the 3.4m shoal in mid-channel, SE of Victoria Point.

2. **West Approach Channel.—**From a position about 9 miles W of Pulo Ganga, steer 090˚ for that island until the SE end of Pulo Besin bears 061˚. Then steer 061˚ until the SE end of Pulo Perlin bears 090˚. A least depth of 5.8m exists about 2 miles along this latter course.

When the SE point of Pulo Perlin bears 090˚, steer 095˚ for Koh Phi light structure which leads between Pulo Perlin and the beacon marking the reef S of it. The SE point of this island can be passed at a distance of 183m. Continue on course 095˚ and then proceed as directed for the North Approach Channel.

3. **South Approach Channel.—**From a position about 4.3 miles W of Kho Piam, steer 048˚ for the summit of Pulo Pingngwe which leads between the N end of Koh Chang and Koh Kan after passing Tree Island at a distance of 0.4 mile abeam. A least depth of 7.3m is found 4.5 mile SW of Koh Kan.

Vessels approaching this channel from the N should keep W of the shoals in the approach until the summit of Koh Chang bears 120˚. Then bring the summit of Pulo Pingngwe to bear 048˚ and proceed as directed above.

When the N tangent of Koh Kan bears 270˚ and is in range with South Peak on Za Det Gyi Island, steer 090˚, keeping that range astern.

When the summit of Pulo Pingngwe bears 335˚, alter course gradually to 045˚ and steer for Koh Phi light structure on that bearing.

Vessels bound for the anchorage off Koh Phi should maintain a course of 045˚ and anchor as convenient. The least depth on this track is 9.1m, but a shoal with a depth of 4.6m lies in mid-channel about 1.8 miles SW of Kho Phi light structure.

Vessels bound for the anchorage off Victoria Point should continue on the 045˚ course until the summit of Round Island bears 270˚. Then alter course to the N and steer 013˚ for Browning Island. The least depth on this track, 7.3m, is located about 1 mile NE of Round Island. When the NE end of Pulo Ru has been passed, steer for the anchorage which lies about 0.5 mile S of Victoria Point.

Caution.—Caution is required because of the lack of navigational aids.

8.95 Victoria Point Harbor (Kawsong Harbor) (9˚59'N., 98˚33'E.) (World Port Index No. 49700), the S settlement of Burma, consists of a small government station and a native village. A police station lies on the summit of the hill forming Victoria Point; some government buildings lie on a ridge to the N. Ocean-going vessels work cargo from lighters at the anchorages.

Ranong, a village which lies about 2 miles above the entrance of Ranong Creek, is the site of a Thailand Government Station. Several tin mines are situated in this area.

The customhouse stands at the inner end of a 137.2m pier which extends from the shore on the W side of Victoria Point Harbor.

A pontoon jetty, with reported depths of 5.5 to 6.1m alongside, extends from the shore of the harbor.

Above Victoria Point, the Pakchan River extends in a general NNE direction. During the Southwest Monsoon, or rainy season, small power vessels can reach the Thailand town of Kraburi, about 28 miles above Victoria Point where the river is about 76.2m wide; above Kraburi the river becomes tortuous.

Glong Maliwun flows into the Pakchan River, on the Burmese side, about 14 miles above Victoria Point. The river is available to vessels, with a draft of 3.7 to 4m, for about 3 miles above the entrance. Higher up, the river becomes narrow and winding, but it can be navigated by power launches as far as Maliwun, a small settlement, about 5 miles farther upriver.

Khlong Bangben (9˚39'N., 98˚29'E.), an extensive shallow inlet, is entered about 7 miles SE of the S end of Koh Piam. The 2m curve lies over 1 mile offshore, S and W of the N entrance point. The channel, which lies on the S side of the entrance, has depths of 1.8 to 3.7m.

Shong Pianam (9˚34'N., 98˚28'E.), or the "Entrance of the Three Big Rivers", an extensive inlet, is entered between Koh Pianam and Laem Tashin, about 0.8 mile S. Koh Pianam, wooded and 228m high, lies about 9 miles SSE of the S end of Kho Piam. Laem Tashin, a high wooded point, lies about 0.4 mile SE of its extremity.

The outer edge of a bar, which has depths of 1.8 to 3.7m, lies 3.5 miles W of the entrance. The bottom is sand and mud.

Within the bar the depths in the entrance range from 18.3 to 29.3m.

The tidal currents attain a rate of 2 to 3 knots at springs in the narrow part of the entrance. In the offing and over the bar, the rate is much less. The N current on the flood is stronger than the S current on the ebb.

Small vessels with local knowledge can anchor, in depths of 9.1 to 16.5m, mud, about 0.5 mile inside the entrance.

Directions.—From a position about 0.5 mile N of Hin Sawai, a vessel should steer 089˚ for a 91m hill on the N end of Koh Pianam. When the summit of **Laem Tashin** (9˚33'N., 98˚28'E.) bears 132˚, course should be altered to that bearing. When the 212m conical hill at the head of the inlet bears 095˚, it should be steered for on that bearing which leads through the entrance to the anchorage.

Casuarina Point to Laem Pak Phra

8.96 Casuarina Point (9˚14'N., 98˚21'E.), the E entrance point of Pak Kura, is low and densely wooded. Takuapa, the W entrance point of Pak Kura, forms the N point of Koh Rah, a high, densely-wooded island. This island, which is steep-to on its W side, is high in its N part and 344m high in its S part.

Takuapa Inlet is the estuary of a large river which discharges through four channels which intersect the W coast of Thailand between the parallels of 9˚15'N and 8˚52'N.

Laem Krangnoi, a low sandy point, lies 3.5 miles S of the S entrance point of Takuapa Inlet. Laem Krangyai, about 4.5 miles SSW of Laem Krangnor, is low, sandy, and backed by tall trees.

From Laem Krangyai, the coast extends S for about 7 miles to Laem Lachan, a wooded bluff, 93m high. This stretch of coast is low in the N part and backed by high hills. These hills

gradually approach the coast, reaching it at Laem Lacham and then receding inland S of this point.

Laem Ao Kham, about 2 miles SSW of Laem Lachan, forms the W entrance point of a common estuary of several rivers. A hill, 84m high, lies on the point which is the N extremity of a bold peninsula. Kao Tamchok, a hill which lies about 2 miles S of the point, is 166m high. Laem Tamchok, about 0.2 mile SW of the hill, forms the W extremity of the peninsula. This peninsula is isolated from and considerably W of any other high land in this vicinity. It is the only readily-identifiable land between Koh Ra and Ko Phuket.

Between Laem Tamchok and Laem Pak Phra, about 22 miles SSE, the coast consists of sandy beaches backed by high wooded hills. Trees grow down to the water's edge in places. The latter point forms the N entrance of Chong Pak Phra, the strait which separates Ko Phuket from the mainland.

Laem Pak Phra is marked by a group of tall trees. A 61m high hill lies just within the point. Koh Pilai, a small hill near the coast about 2.5 miles N of the point, is the only coastal hill between Laem Tamchok and Laem Sai, about 7.5 miles S of Laem Pak Phra. Ko Pilai is hard to identify.

Tides—Currents.—During the Northeast Monsoon, the current off the coast between Koh Ra and Laem Tamchok sets either N or S. It sets in one direction for a considerable period and then without any apparent reason, changes its direction.

The direction does not seem to be related to the wind, as the current often sets N during and after periods of moderate N winds.

Even when opposed by the tidal current, this offshore current maintains its direction. When the current and tidal current are confluent, the resultant current may attain a rate of nearly 2 knots; when in opposition, the rate is usually not more than 1 knot.

Depths—Limitations.—The 40m curve lies about 15.5 miles W of Casuarina Point and about 5 miles W of Laem Tamchok. The inlets and estuaries that intersect the coast N of the latter point are shoal. The coast between Laem Tamchok and Chong Pak Phra is fairly steep-to, with the 20m curve lying up to 2 miles offshore.

Middle Island, Perforated Island, and Similan Island

8.97 **Middle Island** (Koh Tasai) (9˚04'N., 97˚50'E.), densely wooded and 226m high at its S end, lies about 18 miles S of Koh Sindarar Tai. A 91m high peak lies near the N end of the island, with another peak, slightly lower, between it and the 226m peak. The island is steep-to on all except its E side, where depths of 7m are found about 0.3 off a sandy beach about 0.5 mile from the N point of the island.

A rocky shoal, with a depth of 4.2m, lies 0.4 mile S of the island.

Middle Island has been reported to be a good radar target up to 11 miles.

Perforated Island (Koh Born) (8˚51'N., 97˚48'E.), wooded and topped by two distinct peaks, lies 14 miles S of Middle Island. The E peak is the highest. The island derives its name from a hole near the water's edge in the dips between the two peaks. The island is steep-to, except N of its W end, where a depth of 6.4m is found about 0.2 mile offshore.

The **Similan Islands** (8˚35'N., 97˚39'E.), a group of six islands, extend about 12 miles S from Ko Bangu, the N island, which lies 12.5 miles SW of Perforated Island. Ko Bangu is 96m high and wooded. Several large prominent boulders lie close off its SE end; a drying rock lies N of its W end. The remainder of the island is steep-to.

The Similan Islands have been reported to be good radar targets up to 19 miles.

Great Sayer Island (Ko Similan) (8˚39'N., 97˚39'E.), wooded and flat-topped, is separated from Ko Bangu by a channel about 0.3 mile wide, with a depth of about 25.6m. The island is 261m high in its N part. Two well-defined peaks, 157 and 164m high, lie near the S end of the island. A small cove, with a depth of 9.1m, indents the NW end of the island. Some small sandy coves indent the E side of the island.

Survey vessels engaged in offshore exploration may be encountered S and W of the Similan Islands, usually in depths greater than 200m and up to 80 miles from the Thai mainland.

Hin Pusar (8˚37'N., 97˚39'E.), a group of three above-water detached rocks, lies about 0.5 mile SW of the SW end of Great Sayer Island. A rock, with a depth of 15.5m, lies about 0.2 mile S of Hin Pusar.

8.98 The **Center Islands** (8˚35'N., 97˚38'E.) lie between 2 and 4 miles S of Great Sayer Island. Ko Pabu, the N island, is 119m high, conical, wooded, and steep-to, except on its NE side, which is fringed by depths of 3.7m. Ko Miang, the S island, is 128m high, flat-topped, and wooded. A drying rock lies close off the N end of the island. A small sandy cove, with a depth of 7.3m, indents the NE side of the island.

Two islets lie on a reef about 0.2 mile off the NE end of Ko Miang. The intervening channel has a depth of 11.3m. The W islet is 48m high and wooded. The E islet is 20m high and rocky.

Ko Payan (8˚31'N., 97˚39'E.), a small, steep-to, bare conical rock 42m high, lies 3 miles SSE of Ko Miang. Scrub covers the summit of the rock.

Ko Payan has been reported to be a good radar target up to 12 miles.

Hin Payan (8˚30'N., 97˚40'E.), a group of steep-to rocks, some drying and others above-water, lie about 0.6 mile ESE of Ko Payan. A detached drying rock lies about 0.2 mile ESE of the main group.

Ko Payang (8˚30'N., 97˚38'E.), 126m high and wooded, lies 1 mile SW of Ko Payan. The intervening channel has depths of 7.3 to 11m.

Ko Huyong (South Island) (8˚29'N., 97˚39'E.), wooded and topped by two rounded peaks, lies 0.5 mile S of Ko Payang. The island is steep-to except on its NE side which is reef-fringed.

Ko Huyong has been reported to be a good radar target up to 25 miles.

Takua Pa Inlet and Approaches

8.99 **Takua Pa Inlet** (9˚02'N., 98˚18'E.) is the estuary of a large river which flows into the sea through four channels between the parallels of 9˚15'N and 8˚52'N.

No recent surveys have been made of Takua Pa and its approaches. Entry should only be attempted by small vessels having local knowledge.

Pak Kura (9˚16'N., 98˚20'E.), the N entrance of the inlet, lies between the NE end of Koh Ra and Casuarina Point, about 2 miles SE. Depths of 11 to 3.7m are found in the channel, with the greater depths being found on the W side. This narrow, intricate, steep-to channel is the only safe entrance during the Southwest Monsoon.

Pak Chik (9˚09'N., 98˚16'E.), the entrance between the S end of Koh Ra and the N end of Ko Phra Thong, is foul and can only be used by small craft with local knowledge.

Pak Kruen (9˚01'N., 98˚15'E.) is entered between the S end of Ko Phra Thong and the N end of an unnamed island about 1 mile to the S. Extensive sandbanks, parts of which dry, extend about 1 to 2 miles seaward of the entrance. The entrance bar, which lies between 2.5 and 3.5 miles W of the entrance, has a reported depth of 3m. During the Southwest Monsoon, a heavy swell is raised over the bar.

Depths of 9.1 to 12.8m are found along the N side of the channel between the entrance points.

Pak Koh (8˚52'N., 98˚15'E.), the S entrance of the inlet, lies 9 miles S of Pak Kruen. The land in the vicinity of the entrance is densely wooded. The entrance channel leads between sandbanks which are reported to be stationary. Depths of 4.6 to 5.5m are found for about 2 miles within the entrance. Small vessels with local knowledge can use this entrance only under the most favorable conditions.

The town of Takua Pa lies about 4 miles above the mouth of a creek which flows into the E side of Pak Koh about 2 miles within the entrance.

Elbow Point (9˚02'N., 98˚20'E.) lies on the E side of the inlet abreast Macauley Point, the SE end of Ko Phra Thong. A black beacon off the latter point marks an area of foul ground with a depth of 2.7m

Small vessels with local knowledge and drawing up to 3.7m can anchor about 0.5 mile N of Feather Tree, which lies on the N side of Elbow Point. Vessels drawing less than 3.7m can anchor on the S side of the inlet about 2 miles S of Elbow Point.

Pak Ko to Laem Pak Phra

8.100 Laem Krangnoi (8˚50'N., 98˚15'E.) is a low, sandy point about 3.5 miles S of Pak Ko. A drying reef extends about 0.8 mile W from the point.

Laem Krangyai (8˚44'N., 98˚14'E.), about 4.5 miles SSW of Laem Krangnoi and backed by high trees, is another low, sandy point. A drying coral reef surrounds the point and extends about 0.8 mile N and S, and 2 miles W from it.

Klong Kokak (8˚41'N., 98˚15'E.), small river, intersects the coast about 3.8 miles SSE of Laem Krangyai. A village with some tin mines in the vicinity is so close within the entrance that the lights in the village are sometimes visible from seaward.

Krung Nork, a detached drying reef, lies about 1 mile off the entrance of the Klong Kokak. The coast close inshore between this reef and Laem Lachan, about 3 miles to the S, is foul.

Ao Kaulak (8˚36'N., 98˚15'E.), an open bay, indents the coast between Laem Lachan and a point about 3 miles to the S. Laem Ao Kham forms the S entrance point of this bay. A reef, which dries in places, extends about 0.5 mile W from a sandy point about 1 mile SSE of Laem Lachan and divides the bay into two parts. A rock, 3.7m high, lies near the outer part of this reef. Foul ground extends 1 mile offshore in the bight N of the reef and 0.8 mile offshore S of the reef.

8.101 Klong Bagatae (8˚35'N., 98˚14'E.) flows into the S part of Ao Kaulak and serves as the common estuary of several small rivers. Laem Ao Kham is the N extremity of the peninsula which forms the W side of the estuary. The entrance is about 0.5 mile wide, but narrows to a width of 0.2 mile between the 6m curve.

Ban Tablamu Light is shown from a white three-legged structure, 10.1m high, situated at the N end of Laem Ao Kham.

A middle ground, with a least depth of 3.7m, lies on a bar about 0.8 mile within the entrance. A channel extends along the NE side of the peninsula for about 1 mile; from there the bar can be crossed in a depth of 5.2m. Depths of 5.5 to 8.2m are then found in mid-channel up to a position about 3 miles above the entrance, where the river bifurcates.

Small vessels with local knowledge can anchor, in a depth of 11m, mud, about 0.5 mile inside the entrance.

The entrance should be approached on a course of 135˚ in order to pass S of the previously-mentioned 3.7m rock. A course of 190˚ should then be steered so as to pass not more than 183m off the E extremity of the peninsula forming the W side of the entrance.

Between Laem Tamchok and Laem Pak Phra, about 22 miles SSE, the depths gradually decrease from seaward to depths of 11 to 14.6m about 0.5 mile offshore. This coast should be given a berth of at least 3 miles as it has not been closely examined.

Ko Lumphuk (8˚19'N., 98˚16'E.), a group of rocks about 1.8m high, lies about 0.5 mile offshore 7.5 miles N of Laem Pak Phra. Two smaller rocks lie about 0.5 mile N of the group.